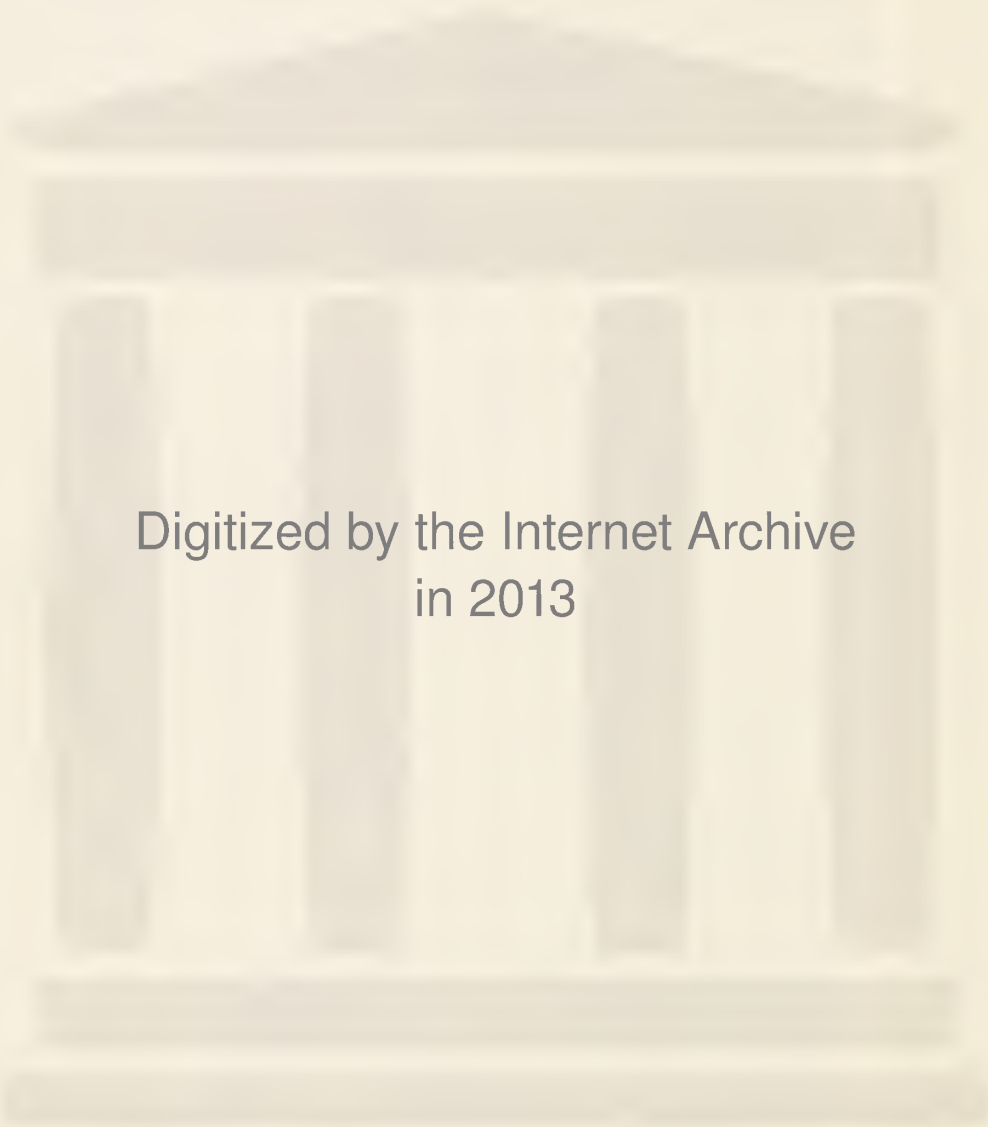




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CIEMSON AGRICULTURAL COLLEGE OF
SOUTH CAROLINA

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Prospectus 1893, Circular of
Information no.2 1894)

1893 - 1901/02

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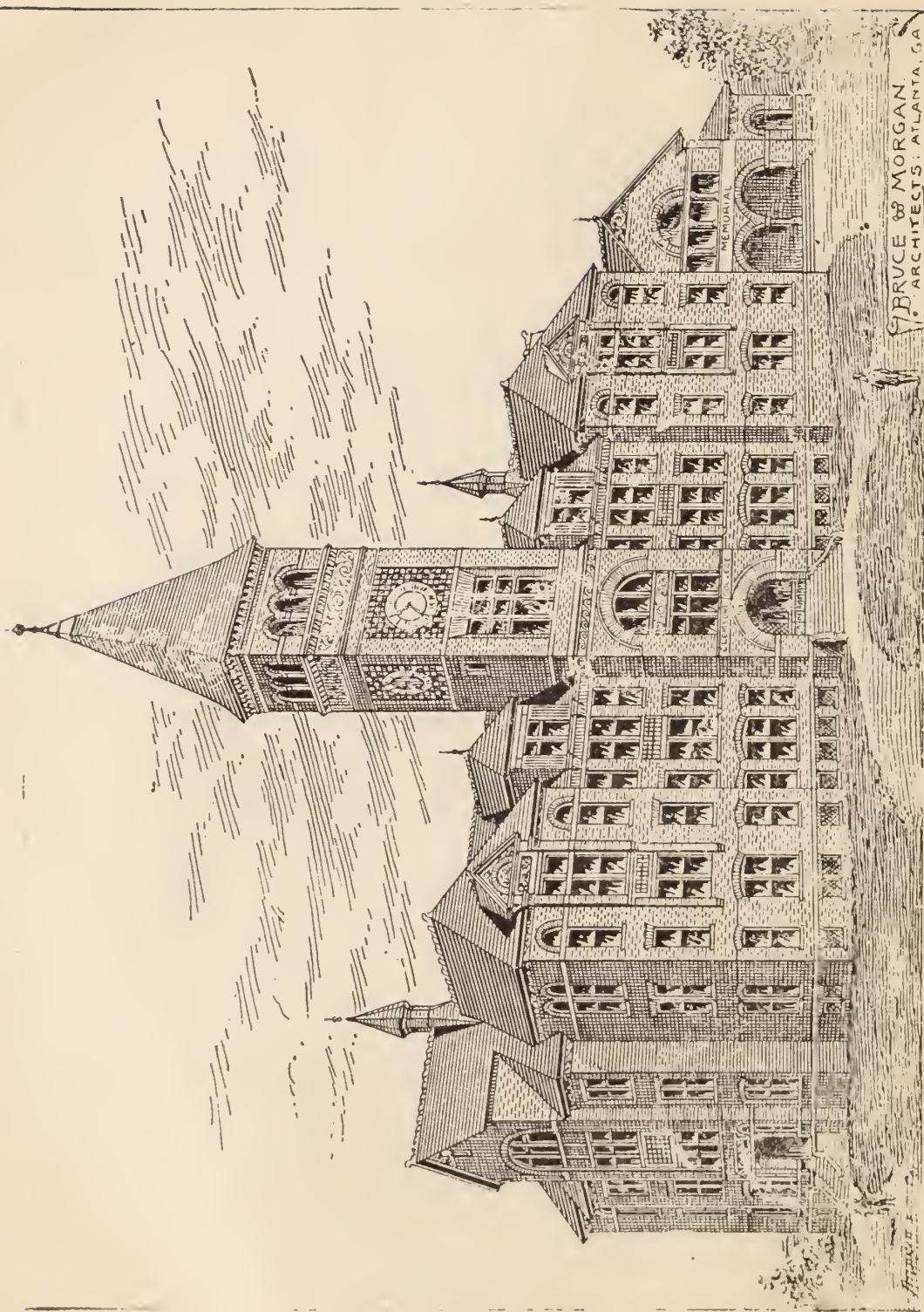
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J. BRUCE & MORGAN
ARCHITECTS: ATLANTA, GA.

PROSPECTUS
OF
Clemson Agricultural College,
(S. C. A. & M. COLLEGE),

TO BE OPENED JULY 6, 1893,

AT

— FORT HILL, S. C.

The old Home of John C. Calhoun.

POST OFFICE, FORT HILL, S. C.

FREIGHT, EXPRESS AND TELEGRAPH OFFICE,

CALHOUN, S. C.

— FORT HILL, 1893. ISSUED BY THE BOARD OF TRUSTEES. —

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THOS. B. HARRISON	Associate Professor of English.
R. N. BRACKETT	Associate Professor of Chemistry.
J. W. HART	Adjunct Professor of Agriculture.
W. C. WELBORN	Assistant Professor of Agriculture.
_____	Assistant Professor of Mathematics.
B. R. STUART	Instructor in Meteorology.
WILLIAMS WELCH	Instructor in Drawing.
E. L. LITTON	Foreman of the Wood Shop.
THOS. M. WRIGHT	Foreman of Machine Shop.
_____	Tutor in Mathematics.
_____	Tutor in English.
DR. A. M. REDFEARN	Surgeon.
JOHN F. CALHOUN	Bursar.
MRS. J. F. CALHOUN	Matron of Dormitory.
MRS. J. A. FITZGERALD	Matron of Infirmary.

STATION STAFF.

.....	Director.
J. S. NEWMAN	Vice-Director,
	Professor of Agriculture.
M. B. HARDIN	Chief Chemist,
	Professor of Chemistry.

ASSISTANTS.

J. F. C. DUPRE	Horticulture.
C. W. SIMS	Chemistry.
F. S. SHIVER	Chemistry.
R. N. BRACKETT	Chemistry.
J. W. HART	Dairy and Stock.
W. C. WELBORN	Agriculture.

COURSES OF STUDY.

1. COURSE IN CHEMISTRY AND AGRICULTURE.

FRESHMAN CLASS.

FIRST TERM.

STUDY.	Hours per week.
Mathematics	5
English	5
History	3
Botany	2
Animal Physiology	1
Practical Work	
Drawing	
Military Drill	

SECOND TERM.

STUDY	Hours per week.
Mathematics	5
English	5
History	2
Botany	2
Physics	2
Agriculture	2
Practical Work	
Drawing	
Military Drill	

SOPHOMORE CLASS.

FIRST TERM.

STUDY.	Hours per week.
Mathematics	5
English	3
History	2
Physics	3
Agriculture	3
Chemistry	3
Practical Work	
Drawing	
Military Drill	

SECOND TERM.

STUDY.	Hours per week.
Mathematics	5
English	3
History	2
Physics	3
Agriculture	3
Chemistry	3
Practical Work	
Drawing	
Military Drill	

JUNIOR CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
English	3	English	3
History	2	History	2
Physics	2	Physics	2
Agriculture	3	Agriculture	3
Chemistry	2	Chemistry	2
Botany	2	Botany	2
Entomology	2	Entomology	2
Military Tactics	1	Military Tactics	1
Military Drill		Military Drill	
Practical Work		Practical Work	

SENIOR CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
English	2	English	2
History	2	Economics	2
Agriculture	3	Agriculture	3
Chemistry	2	Chemistry	2
Botany	1	Botany	1
Entomology	1	Entomology	1
Mineralogy and Geology	3	Mineralogy and Geology	3
Veterinary Science	2	Veterinary Science	2
Military Science	1	Military Science	1
Military Drill		Military Drill	
Practical Work		Practical Work	

2. COURSE IN MECHANICS AND ENGINEERING.

FRESHMAN CLASS.

FIRST TERM.

STUDY.	Hours per week.
Mathematics	5
English	5
History	3
Botany	2
Animal Physiology	1
Practical Work	
Drawing	
Military Drill	

SECOND TERM.

STUDY.	Hours per week.
Mathematics	5
English	5
History	3
Botany	2
Physics	2
Agriculture	2
Practical Work	
Drawing	
Military Drill	

SOPHOMORE CLASS.

FIRST TERM.

STUDY.	Hours per week.
Mathematics	5
English	3
History	2
Physics	3
Agriculture	3
Chemistry	3
Practical Work	
Drawing	
Military Drill	

SECOND TERM.

STUDY.	Hours per week.
Mathematics	5
English	3
History	2
Physics	3
Agriculture	3
Chemistry	3
Practical Work	
Drawing	
Military Drill	

JUNIOR CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
Mathematics	4	Mathematics	4
English	3	English	3
History	2	History	2
Physics	2	Physics	2
Mechanics	3	Mechanics	3
Engineering	3	Engineering	3
Military Tactics	1	Military Tactics	1
Practical Work		Practical Work	
Drawing		Drawing	
Military Drill		Military Drill	

SENIOR CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
Mathematics	3	Mathematics	3
English	2	English	2
History	2	Economics	2
Mechanics	3	Mechanics	3
Engineering	3	Engineering	3
Mineralogy and Geology	3	Mineralogy and Geology	3
Military Science	1	Military Science	1
Drawing		Drawing	
Practical Work		Practical Work	
Military Drill		Military Drill	

3. TWO-YEARS COURSE IN AGRICULTURE.

FRESHMAN CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
Mathematics	5	Mathematics	5
English	5	English	5
History	3	History	2
Botany	2	Botany	2
Animal Physiology	1	Physics	2
		Agriculture	2
Practical Work		Practical Work	
Drawing		Drawing	
Military Drill		Military Drill	

SOPHOMORE CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
Mathematics	5	Mathematics	5
English	3	English	3
Physics	3	Physics	3
Agriculture	5	Agriculture	5
Chemistry	3	Chemistry	3
Practical Work		Practical Work	
Drawing		Drawing	
Military Drill		Military Drill	

4. TWO-YEARS COURSE IN MECHANICS.

FRESHMAN CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
Mathematics	5	Mathematics	5
English	5	English	5
History	3	History	2
Botany	2	Botany	2
Animal Pysiology	1	Physics	2
		Agriculture	2
Practical Work		Practical Work	
Drawing		Drawing	
Military Drill		Military Drill	

SOPHOMORE CLASS.

FIRST TERM.		SECOND TERM.	
STUDY.	Hours per week.	STUDY.	Hours per week.
Mathematics	5	Mathematics	5
English	3	English	3
Mechanics	5	Mechanics	5
Physies	3	Physies	3
Chemistry	3	Chemistry	3
Practical Work		Practical Work	
Drawing		Drawing	
Military Drill		Military Drill	

5. PREPARATORY COURSE.

Arithmetic, English Grammar, U. S. History, and Geography.

LOCATION.

The College is situated in the most healthful portion of the State, at the old home of John C. Calhoun, which, together with 814 acres of land, was donated to the State of South Carolina by the Hon. Thos. G. Clemson, son-in-law of Mr. Calhoun.

The property lies in the south-eastern part of Oconee County, in the Piedmont section, which, during the last century, has been a summer resort for the citizens of the southern and eastern portions of the State.

The property is admirably adapted to the purposes to which it is devoted, possessing great variety of soil and exposure and an abundant supply of pure water.

PUBLIC BUILDINGS.

All of the public buildings except the offices of the Experiment Station, Infirmary, Barns and Stables are of brick.

These buildings are all new and are planned with especial reference to securing the maximum efficiency in their use.

The Board of Trustees are determined that Clemson Agricultural College shall be distinctly industrial in its course of instruction and all of the buildings, as well as the farm, Horticultural Grounds, and the Stock Department, have been planned with especial regard to the application of the teachings of Science to the industrial arts.

THE MAIN COLLEGE BUILDING contains nineteen rooms fitted for lectures and recitations, library, museum, offices and literary society rooms.

THE CHEMICAL BUILDING is a two-story brick structure containing thirteen rooms arranged with special reference to lecture-room and laboratory instruction, the analysis of com-

mercial fertilizers and the chemical work of the State Experiment Station.

In addition to these, a large room in the basement is equipped for assaying.

IN MECHANIC HALL are three rooms 50x70, devoted respectively to Carpentry, Machine Shop, and Forge and Foundry. To this is attached a large boiler room from which the steam will be supplied to the engine and dynamo in Mechanic Hall, to a Steam Laundry, Dairy, and Ginnery.

THE DORMITORY is a three-story brick building containing 152 bed-rooms, a Mess Hall 134x44, Guards' rooms and Store-rooms.

This building is lighted throughout by electricity, heated by steam and supplied with water under pressure, closets and bath rooms upon each floor. The main College building and Memorial Chapel are also lighted by electricity and heated by steam.

PURE WATER is collected through drain tile from a number of springs into a reservoir from which it is pumped to all of the public buildings. The supply affords 120,000 gallons per twenty-four hours.

Comfortable dwellings are furnished to the members of the faculty and all officers and employees connected with the College and Experiment Station.

SPECIAL INFORMATION FOR APPLICANTS.

The first session of the College will commence on the first Thursday in July and close on the third Thursday in December, 1893. Thereafter, the Collegiate year will extend from the third Thursday in February to the third Thursday in December of each year.

Students are not to be admitted under fifteen years of age, except where two brothers apply, one being over fifteen, the other not under fourteen.

Thorough proficiency in Arithmetic, Geography, History of the United States, and a fair knowledge of Grammar, are required for admission into the college classes, but on account of the condition of the public schools, the Faculty are required to establish preparatory classes for pupils not sufficiently advanced but of required age.

Students will, upon entering the College, be examined by a committee of the Faculty, and be assigned to classes according to their proficiency.

Each student will be required to bring with him four sheets, two blankets or comforts, six towels, one pillow, two pillow-cases, and one clothes bag.

All students will be required to work two hours each week-day when practicable, unless excused for sickness or other necessary cause, compensation to be allowed not to exceed eight cents per hour.

Students who perform extra labor, not necessarily educational, shall receive compensation according to faithfulness and quality of work, not to exceed nine cents per hour.

A fee for medical attendance, or hospital fee, shall be charged each student upon admission, not to exceed five dollars, and no extra charge shall be made in any case of sickness.

Expenses for board shall be actual cost of provisions and service, not to exceed \$7.00 per month; washing fifty cents per month. Books and stationery at actual cost.

All students shall be required to board in the institution, except those who live with their parents near enough to attend from their homes. The government shall be military, and each student shall be required to purchase a prescribed uniform of cadet gray, and a fatigue suit.

Students may provide themselves with such work clothes as they desire.

Each student, upon admission, shall deposit with the Treasurer of the College the sum of \$23.75 for uniforms.

The expenses for the Collegiate year will be as follows:

For those unable to pay tuition:

Board for ten months,	\$ 70.00
Washing for ten months,	5.00
Medical Fee,	5.00
Uniforms,	23.75
Total,	\$103.75

For those able to pay tuition:

Board for ten months,	\$ 70.00
Washing for ten months,	5.00
Medical Fee for ten months,	5.00
Uniforms,	23.75
Tuition,	40.00
Total,	\$143.75

Board shall be paid monthly and in advance.

These expenses may be reduced by labor.

HOW REACHED.

The College is one mile from Calhoun, a station of the R. & D. R. R., four miles from Pendleton on C. & G. R. R., and two miles from Cherry's Crossing, a flag Station on C. & G. R. R.

All applications and requests for information should be addressed to Dr. P. H. E. Sloan, Secretary and Treasurer, Fort Hill, S. C.

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CLEMSON AGRICULTURAL COLLEGE,

(A. & M. COLLEGE.)

SOUTH CAROLINA.



CIRCULAR OF

Information No. 2.

1894.



Freight and Express Office, CALHOUN, S. C.

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ABBEVILLE, S. C. :
HUGH WILSON, PRINTER,
1894.

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Hon. Jesse H. Hardin,Chester.
*Hon. J. R. Jefferies,Union.
Dr. P. H. E. Sloan, Sec'y and Treas..Clemson College.

*Deceased.

Hon. W. H. Ellerbe was elected to fill the unexpired term of Hon. J. R. Jefferies.



Faculty and Other Officers.

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President.

H. A. STRODE,
Professor of Mathematics.

M. B. HARDIN,
Professor of Chemistry.

C. M. FURMAN,
Professor of English.

C. W. WELCH,
Professor of Physics.

W. S. MORRISON,
Professor of History.

T. Q. DONALDSON, JR., 2d Lieut. 7th Cavalry, U.S.A.,
Professor of Military Science and Tactics.

S. TOMPKINS,
Professor of Mechanics.

W. L. MCGEE,
Associate Professor of Agriculture.

R. N. BRACKETT,
Associate Professor of Chemistry.

J. G. CLINKSCALES,
Associate Professor of Mathematics.

T. P. HARRISON,
Associate Professor of English.

J. F. C. DUPRE,
Instructor in Horticulture.

J. W. HART,
Adjunct Professor of Agriculture.

L. A. CLINTON,
Assistant Professor of Agriculture.

WILLIAMS WELCH,
Instructor in Drawing.

W. M. YAGER,
Instructor in Mechanical Drawing.

E. L. LITTON,
Foreman of Wood-Shop.

T. W. WRIGHT,
Foreman of Machine Shop.

W. F. MONCREIFF,
Tutor in English.

E. M. BLYTHE,
Tutor in English.

A. SHANKLIN,
Tutor in Mathematics.

R. T. V. BOWMAN,
Instructor in Forge and Foundry Work.

A. M. REDFEARN, M. D.,
Surgeon.

A. SCHILLETTER,
Bursar.



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Hon. M. L. Donaldson, Greenville.
Hon. R. E. Bowen, Briggs.
Jno. N. Hook, Secretary, Clemson College.

STATION STAFF.

E. B. Craighead, Director.
W. L. McGee, Agriculturist.
J. F. C. DuPre, Horticulturist.
M. B. Hardin, Chief Chemist.

ASSISTANTS.

C. W. Sims, Chemistry.
F. S. Shiver, Chemistry.
J. W. Hart, Stock and Dairy.
L. A. Clinton, Agriculture.
W. D. James, .. Foreman of the Farm.

BOARD OF FERTILIZER CONTROL.

Hon. J. E. Tindal, Silver.
Hon. J. E. Wannamaker, ... St. Matthews.
Gov. B. R. Tillman, Trenton.
J. P. Smith, Secretary, .. Clemson College.

Origin and Objects.

A convention of the farmers of South Carolina passed, in 1886, a resolution advocating the establishment of an agricultural college. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who died in 1888, leaving as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and about \$80,000 in other securities for the purpose of establishing an agricultural college.

The Legislature passed an act which became a law in November, 1889, accepting the bequest. The college opened on July 6, 1893, with an enrollment during its first session of 446 students.

The object of the college, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and in the application of the sciences bearing upon agriculture and mechanics; and to give the breadth and the culture necessary for a rounded education, a liberal course is provided in history, in economics, and in English.

It is considered of supreme importance that students should be taught, not only theoretic methods, but practical work in these methods. Young men need to learn to work. With this end in view, a certain amount of manual labor is required of all students. In addition to this, they are encouraged to do volunteer work, the remuneration from which enables many indigent young men to gain an education.

PROVISIONAL COURSE OF STUDY.

FRESHMAN CLASS.

There is but one course in the Freshman year. This leaves the selection of an Agricultural or Mechanical course open until the Sophomore year.

First Term.	Hours per week.	Second Term.	Hours per week.
Mathematics,	5	Mathematics,	5
English,	5	English,	5
Drawing,	4	Drawing,	4
History,	2	History,	2
Botany,	3	Agriculture,	3
Physics,	3	Physics,	3

PRACTICAL WORK.

On the Farm,	2
In the Shops,	8

CHEMICAL AND AGRICULTURAL COURSE.

SOPHOMORE CLASS.

First Term.	Hours per week.	Second Term.	Hours per week.
Mathematics,	3	Mathematics,	3
English,	3	English,	3
History,	2	History,	2
Physics,	3	Horticulture,	2
Chemistry,	3	Chemistry,	3
Agriculture,	3	Agriculture,	3
Drawing,	4	Drawing,	4

PRACTICAL WORK.

In Garden, Orchard and Vineyard,	4
In Chemical Laboratory,	4

JUNIOR CLASS.

First Term.	Hours per week.	Second Term.	Hours per week.
English,	3	English,	3
History,	2	History,	2
Chemistry,	2	Chemistry,	2
Botany,	4	Comp'tive Physiology	3
Entomology,	2	Dairy Husbandry, ..	3
Agriculture,	3	Military Tactics. . . .	1
Military Tactics. . . .	1		

PRACTICAL WORK.

On Farm,	4	In Dairy,	4
In Chemical Laboratory, 8		In Chemical Laboratory, 8	

SENIOR CLASS.

First Term.	Hours per week.	Second Term.	Hours per week.
English,	3	English,	3
History,	2	History,	2
Chemistry,	2	Chemistry,	2
Agriculture,	3	Botany,	3
Horticulture,	2	Horticulture,	2
Military Science. . . .	1	Military Science, . . .	1

PRACTICAL WORK.

On Farm,	4	On Farm,	4
In Chemical Laboratory, 8		In Chemical Laboratory, 8	

MECHANICAL COURSE.

SOPHOMORE CLASS.

First Term.	Hours per week.	Second Term.	Hours per week.
Mathematics,	3	Mathematics,	3
English,	3	English,	3
History,	2	History,	2
Physics,	3	Physics,	3
Chemistry,	3	Chemistry,	3
Drawing,	4	Drawing,	4
Dynamics,	2	Dynamics,	2

PRACTICAL WORK.

Foundry Practice,	8	Machine Shop,	8
In Chemical Laboratory, 4		In Chemical Laboratory, 4	

JUNIOR CLASS.

First Term.	Hours per week.	Second Term.	Hours per week.
Mathematics,	3	Mathematics,	4
English,	3	English,	3
History,	2	History,	2
Physics,	2	Physics,	2
Military Tactics, . . .	1	Military Tactics, . . .	1
Drawing,	4	Drawing,	4
Kinematics,	5	Machine Designs, . .	3
		Thermodynamics, . .	3

PRACTICAL WORK.

Machine Shop,	8	General Shop-work,	8
Mechanical Laboratory, . 4		Mechanical Laboratory, . 4	

SENIOR CLASS.

First Term.	Hours per week.	Second Term.	Hours per week.
Mathematics,	3	Mathematics,	3
English,	3	English,	3
History,	2	History,	3
Military Tactics, . . .	1	Military Tactics, . . .	1
Drawing,	4	Drawing,	4
Thermodynamics, . .	3	Steam Engine, etc..	3
Engineering,	3	Engineering,	3

PRACTICAL WORK.

General Shop-work,	8	Mechanical Laboratory, . 4	
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AGRICULTURE.

W. L. MCGEE, Associate Professor.

J. W. HART, Adjunct Professor.

L. A. CLINTON, Assistant Professor.

The following topics are studied by lectures or text-books:

FRESHMAN CLASS: Second term, three hours a week.

Elementary principles underlying Agriculture with a brief course on farm live stock.

SOPHOMORE CLASS: First term, three hours a week.

Breeds of Live Stock with special reference to their adaptability to the South. Principles of breeding and selection.

SECOND TERM: three hours a week.-

Soil water, surface and subsoil drains, manures, fertilizers, hay and pasture grasses, hay making, rotations, southern farm crops.

JUNIOR CLASS: First term, three hours a week.

Soil physics, implements, improved machinery, farm buildings, laying out of farm, history of agriculture.

SENIOR CLASS: First term, three hours a week.

Stock feeding, study of foods, compounding of rations, study of Experiment Station bulletins, general farm management.

AFTERNOON WORK: The students of the agricultural sections will be required to perform from two to four hours a week of practice work on the farm. This will be in direct line with the work of the class-room. It will consist of practice in the handling of tools and teams, preparation of soil and planting and cultivating, handling improved machinery, harvesting hay and the ordinary farm crops, the management of dairy stock and the manipulation of milk and butter and butter and cheese making. This labor will be alto-

gether educational and students will not be paid for it. In addition to this students of the agricultural department will be allowed to labor from six to ten hours a week on the farm, in the garden, at the barns or in the dairy. This outside labor will, as far as is practicable, be made an exemplification of the work of the class room. For this labor faithfully performed, students will be paid at the rate of eight cents an hour.

As a means of illustration, the department has a farm of some four hundred acres, a good equipment of implements, improved haying machinery, commodious barns for horses and cattle, six large silos, eighty cattle including three pure breeds, and a practical dairy in working order.

HORTICULTURE.

J. F. C. DUPRE, Horticulturist.

The work in this department is almost entirely practical. Theoretical instruction is given, twice weekly, in the second term of the Sophomore year, and during the larger part of the Senior year.

The work is sub-divided as follows :

Horticulture proper, including home gardening and truck farming ; pomology ; viticulture ; floriculture ; canning and experimental work.

The student is required to labor, and is thereby taught, by actual experience, the best methods of preparing, cultivating, and fertilizing the soil ; storing, shipping, and canning fruits and vegetables ; pruning and training trees and vines ; propagating by seeds, grafts, buds, layers and divisions. He is also given instructions in the use of hot beds, cold frames and mulching, together with the art of forcing, crossing and hybridizing. Throughout the entire course this instruction is supplemented by informal lectures on soils, fertilizers, how plants grow, how plants feed, etc.

The experimental garden, orchard and vineyard, together with the truck farm, green house and cannery, give ample means of illustration for this department.

BOTANY.

L. A. CLINTON, Instructor.

FRESHMAN CLASS.

The work during the year consists in the study of systematic structural botany, the text book used being Wood's Botanist and Florist. The object of this term's work is to enable students to become familiar with the structure and organs of the higher plants by careful study of the specimens themselves; to learn something of the system of classification; to acquire the habit of close and accurate observation, and to learn the names of some of our most common flowering plants.

JUNIOR CLASS.

Four hours per week during the first term of the year will be devoted to the study of physiological botany. The work will consist largely in the use of the compound microscope in the examination of cell structure and in the preparation and study of slides by the student himself, the result of his observation being recorded by means of drawings and notes.

• SENIOR CLASS.

Elective work will be given in botany during the second term of the year. This will consist in the study of cryptogams and fungi, special attention being given to a study of the diseases of plants. Opportunity will be given for the study of grasses and clovers, and of all the forage plants best adapted to this region.

DAIRYING.

J. W. HART, Instructor.

Instruction in dairy science will be given in the second term of the Junior year.

Class room instruction, three hours per week ; work at stable and dairy building, two to four hours per week.

The course of instruction will include the following topics :

Dairy cattle in relation to agriculture ; the special dairy cow ; breeds of cattle ; selection of cows ; principles of breeding ; heredity ; prepotency ; atavism ; methods of breeding ; raising calves ; management of cattle ; the composition of feeding stuffs, and their combination into rations for the elaboration of milk ; recording, tabulating, comparing, and discussing results of feeding experiments ; milking ; milk-testing ; cream, and the methods of obtaining it from milk ; hand and power cream separators ; making and marketing butter and cheese ; disposing of the by-products of the dairy ; dairy-buildings ; diseases of cows ; pedigrees and herd-books.

The College herd, comprising about ninety head of pure-bred, grade and native cattle, will be used in teaching.

In the new, commodious and well-equipped dairy building, opportunity will be afforded students to learn how to make butter and cheese of the highest quality with utensils used in large or small dairies, creameries, and cheese factories.

MECHANICAL DEPARTMENT.

S. TOMPKINS, Professor.

E. L. LITTON, Foreman of Wood-Shop.

T. W. WRIGHT, Foreman of Machine-Shop.

W. M. YAGER, Instructor in Mechanical Drawing.

R. T. V. BOWMAN, Instructor in Forge and Foundry Work.

There is no work in this line in the Freshman year.

SOPHOMORE YEAR : Two hours per week throughout the entire session are devoted to the study of dynamics, illustrated by numerous practical problems in velocity, acceleration, force, mass, weight, &c.

JUNIOR YEAR : First term. Five hours per week are spent in the study of kinematics, and the elements of mechanism ; four hours additional per week are taken up in mechanical laboratory practice in measuring forces and testing materials.

SECOND TERM. Three hours per week are occupied in studying heat as the source of power in the steam engine, &c. Also three hours per week are given to the study of motive designs, and four hours per week to mechanical laboratory practice in testing and measuring.

SENIOR YEAR : First term. The study of heat and the steam engine is continued for three hours per week, and practical electricity is studied for the same length of time. Mechanical laboratory work occupies four hours.

SECOND TERM : Three hours per week are given to the theory of prime movers and the study of machinery of power transmission. The study of electricity is continued for three hours per week, and comprehends the theory and design of dynamo machinery and electrical apparatus for lighting, heating, and power purposes. Mechanical laboratory work occupies four hours per week.

SHOP PRACTICE.

FRESHMAN YEAR : All Freshmen take shop practice eight hours per week throughout the entire session. This much of the work being common to both the Agricultural and Mechanical courses and being all that is given in the former course, it is devoted especially to such work as is deemed particularly useful in a course in Agriculture and at the same time essential for mechanical students. Five months are devoted to carpentry and the remainder of the session to blacksmithing.

SOPHOMORE YEAR : First term. Eight hours per week are devoted to foundry work, the students being given

practice in making moulds, charging the cupola, taking off a heat, &c.

SECOND TERM. Machine shop practice is given for eight hours per week throughout this term, comprising practice in chipping, filing, scraping, drilling, turning, boring, planing, shaping, and milling.

JUNIOR YEAR: First term. Machine shop practice continues for eight hours per week up to the middle of the session.

SECOND TERM. With the beginning of this term the shop work becomes elective (subject to the approval of the instructors) and is continued thus for eight hours per week until the end of the session. During this period the students are expected to build complete machines from original designs, and to become acquainted with manufacturing methods.

CHEMISTRY.

M. B. HARDIN, Professor.

R. N. BRACKETT, Associate Professor.

SOPHOMORE CLASS : Three hours a week.

General Chemistry : Inorganic Chemistry, and the leading facts and principles of Organic Chemistry. The laboratory practice, four hours a week, consists in introductory work, and Qualitative Analysis.

Text Books : Roscoe's Elementary Chemistry.

Jones's Junior Course of Practical Chemistry.

JUNIOR CLASS : Two hours a week.

Industrial Chemistry : Air, water, food, clothing, building materials, glass, porcelain, etc., and the metallurgy of gold, silver, copper, iron, etc. The laboratory practice, eight hours per week, and optional all day Saturdays, consists in qualitative and quantitative analysis, and assaying.

Text Books : Wagner's Chemical Technology, Jones's Junior Course of Practical Chemistry, Fresenius' Qualitative Analysis, Fresenius' Quantitative Analysis, Brown's Assaying.

SENIOR CLASS : Two hours a week.

Agricultural Chemistry : The composition of plants, the sources of plant food, the composition of soils, the improvement of soils by chemical means, the composition and manufacture of fertilizers, the composition of feeding stuffs, and the products of the dairy. The laboratory practice consists in the quantitative analysis of waters, fertilizers, ashes of plants, soils, cattle foods, dairy products, etc. Hours are the same as in the Junior class.

Text Books : Johnston's Elements of Agricultural Chemistry, and Bulletins of United States Department of Agriculture containing methods of the Association of Official Agricultural Chemists.

Books of reference : Deherain's *Traite de Chimie Agricole*, Storer's *Agriculture in some of its Relations with Chemistry*, and Wiley's *Agricultural Analysis*.

The chemical library is supplied with valuable works of reference on theoretical and applied chemistry, and with American and foreign journals.

The Sophomore course is required of all students ; the other courses are required of students in Chemistry and Agriculture only.

PHYSICS.

C. W. WELCH, Professor.

The study of Physics begins in the first term of the Freshman year, in order to meet the requirements of the Agricultural and Mechanical courses. This makes the treatment of the subject quite elementary, and necessitates the use of mathematics as little as possible.

The department is sufficiently well equipped to make the experiments which lead to the discovery of the properties

and laws of matter, and to some extent, to make a quantitative treatment of them.

Connected with the lecture room is a room for the safe keeping of all apparatus, and adjoining the latter is the students' laboratory.

The "Laboratory Method" is used both in the elementary and the advanced course.

The advanced course is required of all students who pursue the work of the Mechanical course. The advanced work is begun in the second term of the Sophomore year.

As full mathematical treatment of the subject as is necessary will be given. The laboratory work will be especially emphasized. The course in Physics ends with the Junior year.

MATHEMATICS.

H. A. STRODE, Professor.

J. G. CLINKSCALES, Associate Professor.

A. SHANKLIN, Tutor.

FRESHMAN CLASS : Five hours a week.

Arithmetic and the elements of Algebra are completed in the preparatory course, and the first term of the Freshman year is devoted to the study of Wentworth's Complete Algebra. During the second term, Wentworth's Plane Geometry is studied.

SOPHOMORE CLASS : Three hours a week.

Algebra is completed, being supplemented by the professor's notes on Higher Algebra ; the class is also carried through the remainder of Plane Geometry and through Solid Geometry. Wentworth's Plane Trigonometry and Surveying are completed during the year.

JUNIOR CLASS : Three hours a week.

Wentworth's Spherical Trigonometry and Analytical Geometry are studied throughout the Junior year.

SENIOR CLASS : Three hours a week.

This class will devote its time to the study of the Calculus.

The Mathematical course for Agricultural students stops at the close of the Sophomore year. The course for Mechanical students will be continued through the Junior and the Senior years to prepare for the highest demands of the technological courses.

ENGLISH.

C. M. FURMAN, Professor.

T. P. HARRISON, Associate Professor.

W. F. MONCREIFF, Tutor.

E. M. BLYTHE, Tutor.

The purpose of the course in English is to enable the student to acquire the power of correct and terse expression, and enable him to read with appreciation the best literature of the language.

A thorough grounding in English grammar and elementary composition will be furnished in the sub-collegiate grades.

FRESHMAN CLASS : Five hours a week.

Lockwood's Lessons in English ; Strang's Exercises ; Clark's Practical Rhetoric ; reading from Irving and Scott ; exercises in composition.

SOPHOMORE CLASS : Three hours a week.

Genung's Rhetoric ; studies in Macaulay, Lowell, and Addison ; essays.

JUNIOR CLASS : Three hours a week.

Pancoast's English Literature ; studies in Froude, Thackeray, Carlyle, and Ruskin ; essays.

SENIOR CLASS : Three hours a week.

First term : Study of Shakespeare ; Doane's Primer, and the reading of two plays.

Second term : English poetry ; Minto's Characteristics of English Poets; with readings.

Oration during the entire year.

Parallel readings are required throughout the course.

HISTORY.

W. S. MORRISON, Professor.

FRESHMAN CLASS : Two hours a week.

First term : Weber's History of South Carolina.

Second term : Tilden's Commercial Geography.

SOPHOMORE CLASS : Two hours a week.

First term : Constitution and Government of the United States.

Second term : True and Dickinson's Our Republic.

Myer's General History (begun).

JUNIOR CLASS : Two hours a week.

Myer's General History (completed).

Comparative View of Governments.

SENIOR CLASS : Two hours a week.

Economics.

Walker's Political Economy (briefer course.)

DRAWING.

WILLIAMS WELCH, Instructor.

W. M. YAGER, Instructor.

FRESHMAN CLASS.

AGRICULTURAL AND MECHANICAL STUDENTS.

First term : Drawing free-hand in perspective, geometrical forms, details of constructions and such objects as are made or used in the shop or laboratory. Shading.

Second term : Drawing free-hand from models and natural objects placed before the class. Lettering.

AGRICULTURAL STUDENTS.

SOPHOMORE CLASS.

First term : Drawing free-hand from natural objects, such as plants, flowers, fruits, insects, etc., and objects seen under a strong microscope. Combining colors and some practice in coloring from natural objects with water-colors.

Second term : Architectural Drawing. Making complete working drawings, and writing specifications for a dwelling, barn, or other building. Plotting surveys made by the class.

MECHANICAL STUDENTS.

SOPHOMORE CLASS.

First term : Lectures on the selection, use, and care of drawing instruments and drawing materials. Drawing accurately in ink practical geometrical problems relating to lines, angles, circles, tangents, polygons, and such curves as the ellipse, involute, cycloid, helix, etc. Projections, intersections, and development of the surface of solids. Isometric Perspective.

Second term : Lectures on the method of making mechanical drawings, copying a drawing, and making complete working drawings of pieces of machinery from working models. Tracing and making blue prints.

JUNIOR CLASS.

Both terms : Designing and making complete working drawings of parts of machines and structures in accordance with the principles learned in the theoretical course of Applied Mechanics.

SENIOR CLASS.

Both terms : Designing and making detailed working drawings and full specifications of special machines and structures in accordance with the principles learned in the course in Mechanical Engineering.

Four hours a week are required throughout the course.

MILITARY DEPARTMENT.

COMMANDANT, AND COLONEL OF CADET REGIMENT—Lieutenant T. Q. Donaldson, Jr., 7th, U. S. Cavalry.

MAJORS—E. M. Blythe and A. Shanklin.

For the purpose of instruction and discipline the corps of cadets has been given the regimental organization. The Commandant of Cadets is the Colonel, and the two battalions are commanded respectively by Majors Blythe and Shanklin. Each of the two battalions consists of three companies. The cadets in barracks are under military discipline all the time, day cadets while actually present at the College.

The instruction of cadets is both theoretical and practical, and embraces the infantry and artillery drill regulations, the manual of guard duty, and lectures on the art and science of war.

In addition to the special regulations of the military department, cadets are subject to the following general regulations.

Cadets will at all times be respectful in their bearing to the professors and other officers of the College.

The practice known as hazing is positively forbidden, and any cadet indulging in this practice will be expelled from the College.

Cadets are positively forbidden to use or to have in their possession intoxicating liquors of any description.

The use of tobacco by cadets, in any form, is prohibited. Profanity is positively forbidden.

Cards and all games of chance are positively forbidden.

All combinations of cadets for the purpose of conveying censure or praise to one of their number is prohibited. Also, all combinations to defeat the purpose of any regulation of the College.

Fighting is positively forbidden. If any cadet shall consider himself wronged by another or by a professor or by an officer, he is to complain thereof in writing to the president, who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

No cadet will take food from the mess-hall without permission from the president.

Any cadet receiving 100 demerits for any term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

INSTRUCTION.

SENIOR CLASS : At least one hour per week theoretical instruction and at least three hours per week practical.

JUNIOR CLASS : Same as Senior.

SOPHOMORE : At least three hours per week practical instruction.

FRESHMAN, AND CADETS OF FITTING SCHOOL : Same as Sophomores.

FITTING SCHOOL.

For the benefit of those not prepared to enter the College classes, a course of study is provided, in which there is careful drill in the elements of English, Mathematics, Geography, and History. The following is an outline of the work.

ENGLISH: Longman's Grammar; Longman's Composition; reading of "Seven American Classics," "Seven British Classics," and Kingley's Greek Heroes; Whitney-Lockwood Grammar; frequent written exercises.

MATHEMATICS: Wentworth's Grammar-School Arithmetic; Wentworth's Easy Steps in Algebra.

HISTORY AND GEOGRAPHY: Appleton's Standard Higher Geography (edition for the Virginias and the Carolinas); Eggleston's History of the United States and Its People.

SOUTH CAROLINA EXPERIMENT STATION.

E. B. CRAIGHEAD, Director.
W. L. MCGEE, Agriculturist.
J. F. C. DUPRE, Horticulturist.
M. B. HARDIN, Chief Chemist.
C. W. SIMS, Assistant Chemist.
F. S. SHIVER, Assistant Chemist.
J. W. HART, Stock and Dairy.
L. A. CLINTON, Assistant Agriculturist.
JNO. N. HOOK, Secretary.

Under the Act of Congress approved March 2, 1887, the South Carolina Experiment Station was organized in January, 1888, at Columbia, as a department of the University of South Carolina. It was removed to Fort Hill in 1890 and reorganized as a department of Clemson Agricultural College.

The principal lines of work heretofore have been the analysis and control of fertilizers, experiments with fertilizers, and with field and garden crops.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investigation being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom.

Aside from the direct information gained, the habits of systematic observation formed will, in after years, be of invaluable assistance to students in solving for themselves the problems of agriculture.

BUILDINGS.

The principal academic building contains eighteen recitation rooms, a library, offices for the president and for the

secretary and treasurer, and halls for the students' literary societies.

Adjoining the main building is a hall capable of seating eight hundred persons, used for religious services and as an assembly room.

A three story brick building, containing one hundred and sixty rooms, constitutes barracks for the cadets, and in addition to rooms for a dormitory, it has a mess-hall one hundred and thirty-four by forty-four feet in size. This building is heated by steam, lighted by electricity, and has an abundant supply of pure fresh water.

The rooms in the barracks are each furnished with single width folding iron cots, mattresses, table, chairs, wardrobes, buckets, pan, cup, and mirror.

Adjacent to the mess-hall is the kitchen, fifty feet by thirty-seven feet, equipped with all the modern appliances for culinary purposes.

The hospital, located apart from the other college buildings, is of wood and was especially constructed for its purposes. It is connected with the water works and with the electric light plant, and it has a thorough sewerage system.

The mechanical building is a large brick structure covered with slate and ornamented with towers and gables. It is composed of one main three-story building with three wings, one of which is two stories high, the other two being one story. The offices, drawing, and lecture rooms are ceiled and finished up, some in natural woods, others in suitably colored paints. The shops have a rougher finish more suitable for their several purposes. The different shop rooms are laid on a liberal scale and are well adapted to the work of instruction in the mechanic arts. The wood shop comprises an office and four rooms with a total floor space of 9,200 square feet. The forging shop and foundry are in one room with 2,500 square feet. The machine shop is composed of two rooms and an office with floor area of 8,300 square feet. The tool and store room occupies 1,450 square feet. The boiler, engine and dynamo rooms 2,300 square feet. The office 500 square feet. The lecture and drawing rooms 3,400 square feet. A total



area in the entire building of 27,650 square feet. It is equipped with modern machinery and appliances for instruction in mechanic arts, and the outfit is being constantly increased as occasion demands.

The chemical laboratory is of brick, fifty by eighty feet, two stories high. It is roofed with slate and finished inside with southern pine.

On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, and are supplied with all necessary chemical and optical apparatus. Of the other rooms on this floor, one is a balance room for students, one an office, and the third is fitted up as a laboratory for advanced students. The basement is used for assaying and for storage.

On the second floor there are five rooms. The qualitative laboratory, which is the largest of these, is thirty-six by forty-eight feet, with a pitch of seventeen feet in the clear. It will accommodate sixty students at a time, and is provided with hoods for carrying off noxious gases, convenient working tables, water, gas, and all necessary appliances for experimental work. The other rooms on this floor are the lecture room, professor's laboratory, an office, and a room for gas analysis.

A wooden building containing offices, a library, and storage and seed rooms, is provided for the use of the officers of the Experiment Station.

The college is provided with two barns. One, thirty-six feet by eighty feet, for the teams, wagons, and the storage of forage. Of the other, one section, one hundred and eighty-four feet by thirty feet, accommodates eighty head of cattle; and the second, forty by seventy-two feet, contains six silos with an aggregate capacity of four hundred tons.

The dairy building, especially constructed for dairy purposes, is equipped with a twelve horse-power boiler, an eight horse-power engine, and apparatus necessary for butter and cheese-making by most approved methods.

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200

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198

The horticultural department is provided with a greenhouse, a canning house, and a packing house with brick basement.

The laundry is a brick building, specially constructed and fitted with the improved machinery of a modern steam laundry.

A hotel, beautifully located, over-looking the campus and college buildings, has been erected. It will be open for guests by the first of March, 1895.

Nine two-story brick buildings, nine six-room cottages, and sixteen smaller houses furnish residences for professors and other employees.

The former residence of John C. Calhoun is kept, in accordance with the provisions of Mr. Clemson's will, as a place for preserving the relics of Calhoun, and for the fine collection of oil paintings left to the College by Mr. Clemson.

WATER SUPPLY,

There are two sources from which water is obtained. The general supply is collected through iron pipes into a reservoir, from which it is pumped into a water-tower eighty feet high, whence it is distributed.

Drinking water is pumped, in a continuous stream, from a bold spring directly into the barracks: it is by this means furnished fresh, pure, and cold.

The waste water is used for flushing the sewer-pipes, which empty into the Seneca river, a half-mile away.

GENERAL STATEMENTS.

All students are required to board in the institution, except those who live with their parents near enough to attend from their homes.

The government is military, and each student is required to purchase the prescribed uniform.

Students may provide themselves with such work clothes as they desire.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow, and two pillow cases.

EXPENSES.

The school year is divided into four quarters of two and a half months each. Expenses per quarter are as follows:

Board (including fuel, lights, &c.,) . . .	\$15 00
Washing,	1 25
Medical Fee	1 25
Incidental Fee	50
	\$18 00

This amount will be required *invariably in advance* and no student will be permitted to enter any class until it is settled. In addition to this, new students are required to purchase two uniforms, cost \$28.40, for which measure will not be taken until money is deposited with the Treasurer. Books and stationery may be bought of the College at cost for cash. Students will not be credited for these articles. The annual cost of books and stationery per student varies from \$6.00 to \$10.00.

Agricultural students may work forty hours a month at 8 cents an hour, and may thus make \$32.00 a year, or \$8.00 a quarter.

Preparatory students have the same privilege.

Mechanical students will be paid only the money value of their work—never over 8 cents an hour.

No reduction in board will be made for students who come in after the opening of a quarter nor for those who go home before the close. The only exception to this rule will be made in favor of students who, for satisfactory reasons, are compelled to be absent for a period of one month or more.

REQUIREMENTS FOR ADMISSION.

The third session of the College will begin on Thursday, February 21, 1895.

Students under fifteen years of age are not to be admitted, except where two brothers apply, one being over fifteen, the other not under fourteen.

Thorough proficiency in Arithmetic, Elementary Algebra, English Grammar, Geography, and History of the United States is required for admission into the Freshman Class. A preparatory course is provided for students not sufficiently advanced for the College classes. The text-books recommended to those preparing to enter the Freshman Class are Wentworth's Grammar-School Arithmetic, Wentworth's First Steps in Algebra (used in the preparatory course), or Robinson's Elementary Algebra, Whitney-Lockwood English Grammar, Appleton's Higher Geography, Eggleston's History of the United States and Its People.

It is of utmost importance that applicants be present on the day of the opening.

PHYSICAL REQUIREMENTS AND MEDICAL ATTENTION.

A. M. REDFEARN, M. D., SURGEON.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption, or any other contagious or communicable disease, or any permanent disability for manual labor or military duty. All cases of serious sickness are transferred immediately to the hospital for treatment, the parents of such cadets being notified by letter, and in event of sudden or alarming illness, by telegraph.

The hospital has a capacity of twenty beds and its facilities are fairly complete. The hospital staff, consisting of the matron and two nurses, is amply sufficient to insure good and personal attention to each patient.

LIBRARY.

A series of rooms in the main building is specially constructed for use as a library. About 600 volumes of standard English literature, and 250 on scientific agriculture are already available for students. An appropriation of \$1,000

has been made for the purchase of additional books, and it is expected that an equal appropriation will be made each year until a well selected library is obtained.

READING ROOM.

The reading room, to which Cadets have access, receives regularly the following newspapers and periodicals:

The daily papers of the State;
The Atlanta Constitution;
The New York Times;
Many county papers are on file;
American Agriculturist;
American Journal of Politics;
Century;
Cosmopolitan;
Edinburgh Review;
Educational Review;
Evening Post (N. Y.-Saturday edition);
Fortnightly Review,
Forum;
Good Roads;
Harper's Monthly;
Harper's Weekly;
Illustrated American;
Illustrated London News;
Judge;
Life;
Magazine of American History;
Munsey's Magazine;
Nation;
North American Review;
Overland Monthly;
Popular Science Monthly;
Public Opinion;
Puck;
Review of Reviews;
Scientific American and Supplement;
Scribner's Magazine;
Short Stories;
Southern Cultivator;
St. Nicholas;
Youth's Companion.

LITERARY SOCIETIES.

The students have organized three literary societies: the Calhoun, the Palmetto, and the Columbian.

The training to be gained from the societies is valuable, and all students are encouraged to join one of them. Public celebrations, at which there are debates, orations, and declamations by the students, are held during the year.

RELIGIOUS SERVICES.

During the past year there has been preaching in Memorial Hall on Sunday morning by ministers of the different denominations. All students attend these services. In addition to these a Sunday School, at which attendance is voluntary, meets every Sunday.

Chapel services are conducted every morning by the professors in turn.

A Christian Association of Cadets has been organized.

LOCATION.

The College is one mile from Calhoun, a station on the Southern Railway, four miles from Pendleton, on the C. & G. R. R., and two miles from Cherry's Crossing, a flag station on the C. & G. R. R.

Students from the lower part of the State are advised to buy their tickets and have their trunks checked to Cherry's Crossing. Wagons will meet the trains there on the day of the opening to transfer baggage to the College.

All applications for information should be addressed to President E. B. Craighead, Clemson College, S. C.



Register of Students.



Sophomore Class.

AGRICULTURAL SECTION.

Name.	County.
Blain, J. M	Chester.
Boulware, G. P	Newberry.
Bowers, V. P	Hampton.
Breazeale, J. F.....	Anderson.
Briggs, J. L.....	Aiken.
Brown, E. P.....	Spartanburg.
Busch, H.....	Aiken.
Dean, L. E.....	Anderson.
Doar, B	Georgetown.
Dunlap, H. M	York.
Dunlap, W. M	York.
Elliott, W. R.....	Fairfield.
Everett, E. H.....	Marlboro.
Fair, J. S.	Newberry.
Farley, W. C.....	Spartanburg.
Felder, W. L.....	Orangeburg.
Fitts, W. R.....	Hampton.
Folk, J. F.....	Colleton.
Ford, J. B.....	York.
Furman, C. M.....	Oconee.

Gooding, P. H	Hampton.
Gray, J. W.....	Greenville.
Hamilton, R. G.....	Fairfield.
Hanvey, J. T	Abbeville.
Harris, Y. A.....	Edgefield.
Holloway, J. G.....	Abbeville.
Hope, J. H.....	Lexington.
Johnson, B. W.....	Spartanburg.
Langley, C. P.....	Charleston.
Leitzsey, C. L.....	Newberry.
Maner, J. O.....	Barnwell.
McCluney, F.....	Union.
Moore, J. H.....	Abbeville.
Moorman, T. S.....	Richland.
Padget, J. H.....	Edgefield.
Poole, J. T., Jr.....	Laurens.
Redfearn, R. A....	Chesterfield.
Robertson, B. F.....	Pickens.
Shanklin, J. A.....	Anderson.
Sifley, M. L.....	Spartanburg.
Sloan, B. F.....	Oconee.
Smith, D. L.....	Berkeley.
Smith, J. M.....	Berkeley.
Snider, C. H	Orangeburg.
Steele, G. G.....	Fairfield.
Tillman, B. R., Jr	Richland.
Tompkins, F. G.....	Richland.
Triplett, J. G.....	Chester.
Turnipseed, B. R.....	Richland.
Werts, L. A.....	Edgefield.
Wiggins, J. B.....	Berkeley.
Yeldell, G. S.....	Edgefield.
Young, R. D.....	Laurens.

MECHANICAL SECTION.

Name.	County.
Aull, B. M.....	Newberry.
Bowen, J. T.....	Pickens.
Bradley, J. T.....	Abbeville.
Brown, C. A.	Anderson.

Bryant, F. L.....	Spartanburg.
Calhoun, P. N.....	Oconee.
Carpenter, W. H.....	Anderson.
Carter, S. T.....	Edgefield.
Chreitzberg, A. M.....	Charleston.
Cliff, H. G.....	Charleston.
Cothran, T. W.....	Abbeville.
Culler, F. I.....	Orangeburg.
Dowling, D.....	Barnwell.
Dunn, A. F.....	Abbeville.
Earle, E. P.....	Oconee.
Fitts, J. L.....	Hampton.
Folger, E.....	Pickens.
Hart, G. W.....	Orangeburg.
Hoffman, W. A.....	Orangeburg.
Hunter, J. E.....	Newberry.
Klugh, W. W.....	Abbeville.
Langley, P. G.....	Charleston.
Lee, R. E.....	Abbeville.
Mauldin, I. M.....	Pickens.
Miller, W. L.....	Greenville.
Napier, C. D.....	Marlboro.
Parrott, S. F.....	Darlington.
Pegues, O. M.....	Marlboro.
Rawl, H. J.....	Lexington.
Richardson, E. L.....	Oconee.
Sease, L. A.....	Lexington.
Simpson, J. G.....	Anderson.
Speck, O. F.....	Newberry.
Stribling, P. O.....	Oconee.
Taylor, F. E.....	Anderson.
Thomson, D. P.....	Spartanburg.
Tindal, A. J.....	Richland.
Tuten, T. H.....	Hampton.
Wardlaw, W. W.....	Abbeville.
Welch, R. H.....	Newberry.



Freshman Class.

AGRICULTURAL SECTION.

Name.	County.
Addison, J. L.....	Greenville.
Allen, W. R.....	Spartanburg.
Anderson, W. R.....	Laurens.
Barnes, J. F.....	Anderson.
Black, R. E.....	Colleton.
Blackwell, R. S.	Edgefield.
Blain, W. A.....	Chester.
Blankenship, E. M	York.
Boggs, W. B	Anderson.
Brice, S. M.....	Fairfield.
Brice, L. M.....	Fairfield.
Brown, J. W.....	Spartanburg.
Browne, D. O.....	Anderson.
Browning, S. E.....	Berkeley.
Bryan, A. B.....	Barnwell.
Chamblee, J. R.....	Anderson.
Chappell, O.....	Richland.
Charles, G. H.....	Laurens.
Collins, R. W.....	Spartanburg.
Copeland, J. M.....	Laurens.
Cothran, F. H.....	Abbeville.
Crawford, B. S.....	Anderson.
Crouch, W. B.....	Newberry.
Deal, M. H.....	Edgefield.
Duckett, J. O.....	Abbeville.
Duncan, J. C.....	Newberry.
Eaddy, A. G.....	Williamsburg.
Edwards, J. E.....	Abbeville.
Fletcher, E. R.....	Marlboro.
Garris, J. S.....	Colleton.
Gibert, J. B.....	Abbeville.
Grubbs, M. W.....	Anderson.
Hallum, R. T.....	Pickens.

Hankinson, L. H.....	Aiken.
Hanvey, G. A... ..	Abbeville.
Hare, A. D.....	Berkeley.
Hayden, T. J.....	Orangeburg.
Henderson, W. E.....	Abbeville.
Henry, D. H.....	Abbeville.
Hicklin, A.....	York.
Higgins, M. M.....	Anderson.
Hunter, B. A.....	Abbeville.
Hunter, W.....	Pickens.
Jeffares, J. W.....	Fairfield.
Jefferies, H. E.....	Union.
Keith, B. C.....	Greenville.
Kelly, B. F.....	Sumter.
Kenyon, W. A.....	Charleston.
Lake, M. R.....	Newberry.
Lawson, W. B.....	Abbeville.
Leach, J. E.....	Greenville.
Miley, G. W.....	Barnwell.
Millar, C. B.....	Charleston.
Miller, E. J.....	Chesterfield.
Miller, J. A.....	Chesterfield.
Minus, J. P., Jr.....	Colleton.
Moore, P. W.....	Greenville.
McFadden, W. H.....	York.
Nash, M. L.....	Greenville.
Nichols, R. W.....	Laurens.
Nixon, J. P.....	Edgefield.
Norris, E. B.....	Berkeley.
Parks, R. J.....	Edgefield.
Parks, W. P.....	Edgefield.
Pearman, B. J.....	Anderson.
Pegues, C. K.....	Marlboro.
Pickett, J. E.....	Oconee.
Pinson, J. A.....	Anderson.
Pitts, J. W.....	Edgefield.
Rampey, W. C.....	Abbeville.
Reynolds, T. W.....	Darlington.
Reynolds, W. S.....	Darlington.
Riggins, W. G... ..	Colleton.
Roberts, J. H.....	Lexington.
Robinson, T. C.....	York.
Ruff, T. D.....	Fairfield.
Scurry, J. B.....	Newberry.

Self, J. C.....	Edgefield.
Shaw, T. C.....	Anderson.
Smith, J. B.....	Orangeburg.
Smith, L. J.....	Anderson.
Spencer, R. L.....	York.
Spivey, J. G.....	Georgetown.
Sprott, J.....	Clarendon.
Stackhouse, D. S.....	Marion.
Stubbs, C. H.....	Sumter.
Suber, G. H.....	Newberry.
Taylor, I. B.....	Abbeville.
Teague, L. S.....	Laurens.
Thomas, H. J.....	Union.
Walter, W.....	Orangeburg.
Waters, W.....	Spartanburg.
Westcott, W. R.....	Orangeburg.
Wicker, R. D.....	Newberry.
Wilson, A. P.....	Chesterfield.
Wofford, W. S.....	Union.

MECHANICAL SECTION.

Name.	County.
Belcher, R. E.....	Anderson.
Bethea, J. F.....	Marion.
Bosworth, H. L.....	Anderson.
Boyne, J. F.....	Charleston.
Breazeale, B. B.....	Anderson.
Brock, W. T.....	Chesterfield.
Brogdon, J. E.....	Sumter.
Bruce, J. C.....	Marlboro.
Burriss, C.....	Anderson.
Burriss, F. E.....	Anderson.
Burriss, W. H.....	Anderson.
Caldwell, A. P.....	Spartanburg.
Chandler, A. E.....	Florence.
Colson, G. E.....	Charleston.
Crouch, J. R.....	Orangeburg.
Culler, H. H.....	Orangeburg.
Dowling, C. B.....	Lexington.
Dreher, L. S.....	Lexington.
DuPre, E. M.....	Richland.

Edwards, R.....	Orangeburg.
Ellerbe, W. T.....	Horry.
Epting, H. O.....	Anderson.
EsDorn, C. H.....	Charleston.
Evans, J. G.....	Abbeville.
Fair, R. P.....	Newberry.
Fishburne, S. B.....	Barnwell.
Foster, A. F.....	Spartanburg.
Fuller, W. P.....	Laurens.
Garner, F. M.....	Darlington.
Gaston, J. H.....	Aiken.
Gaston, W. H.....	Aiken.
Gentry, C. W.....	Spartanburg.
Glenn, F. M.....	Anderson.
Glenn, W. H.....	Richland.
Gourdin, T. B.....	Williamsburg.
Hamnett, H. J.....	Barnwell.
Hoffmeyer, H. F. L.....	Florence.
Hogg, W. T.....	Anderson.
Hook, J. H.....	Orangeburg.
Inman, J. R.....	Georgetown.
Jennings, H. G.....	Charleston.
Jennings, M. B.....	Fairfield.
Johnson, J. D.....	Orangeburg.
Jones, F. N.....	Colleton.
Jones, L.....	Oconee.
Jordan, H. S.....	Aiken.
Kirkland, J. M.....	Barnwell.
Knox, L.....	Oconee.
Lawson, F. W.....	Abbeville.
Lemacks, J. C.....	Colleton.
Little, C. C.....	Laurens.
Long, W. D.....	Lexington.
Lorenz, J. H.....	Aiken.
Mahaffey, C. B.....	Anderson.
Major, J. A.....	Abbeville.
Mauldin, C. M.....	Greenville.
Maxwell, J. D.....	Anderson.
Michel, M. S.....	Charleston.
Moore, L. B.....	Abbeville.
Moore, M. D.....	Greenville.
Moorman, R. C.....	Richland.
McComb, R. S.....	Abbeville.
McCrary, J. A.....	Anderson.

McDavid, A. W.....	Greenville.
Nicholson, C. S.....	Kershaw.
O'Neal, L. A.....	Anderson.
Parrott, J.....	Darlington.
Peterkin, W. G.....	Orangburg.
Quarles, J. P.....	Abbeville.
*Rembert, E. M.....	Colleton.
Rhodes, W. M.....	Darlington.
Rogers, D. F.....	Marion.
Rollins, R. C.....	Florence.
Rosborough, E. E.....	Fairfield.
Ryan, B. J.....	Edgefield.
Sample, A. B.....	Abbeville.
Sawyer, G. L.....	Aiken.
Seaborn, W. E.....	Oconee.
Seigler, C. H.....	Aiken.
Smith, A. P.....	Chester.
Smith, C. L.....	Anderson.
Smith, E. E.....	Richland.
Smith, J. B.....	Marion.
Smith, R. S.....	Marion.
Stoney, J. G.....	Barnwell.
Swygert, G. H.....	Lexington.
Talbert, A. D.....	Edgefield.
Taylor, J. E.....	Charleston.
Thomas, H. D.....	Sumter.
Turnipseed, L. A.....	Richland.
Vance, Y. H.....	Laurens.
Vogel, T. R.....	Barnwell.
Walker, P. F.....	Greenville.
Walker, T. J.....	Barnwell.
Ware, E. W.....	Greenville.
Wells, M. M.....	Abbeville.
Wise, J. T.....	Aiken.
Woodside, R. I.....	Greenville.
Wright, W. P.....	Laurens.

* Deceased.

Higher Preparatory Class.

Name.	County.
Adams, E. C	Richland.
Adams, H.....	Abbeville.
Anderson, E. T.....	Pickens.
Anthony, W. H	Pickens.
Austin, J. R	Anderson.
Avinger, W. S. D	Berkeley.
Ayers, L. W	Orangeburg.
Baskin, J. C.....	Sumter.
Bass, R. E.....	Marion.
Black, O. D	Abbeville.
Blackman, E. F.....	Lancaster.
Blackwell, W. G	Edgefield.
Blakeley, W. R	Greenville.
Bobo, W. N.....	Union.
Boone, M. H.....	Orangeburg.
Bourne, D. N.....	Georgetown.
Bradford, R. D.....	Sumter.
Briggs, T. H.....	Edgefield.
Brockman, T. W.....	Spartanburg.
Bull, J. V.....	Orangeburg.
Burnett, R. A.....	Spartanburg.
Caldwell, J. G.....	Orangeburg.
Calhoun, J. S.....	Barnwell.
Carson, B. G.....	Berkeley.
Carter, F. E.....	Aiken.
Chase, C. C.....	Spartanburg.
Cheatham, J. C.....	Abbeville.
Chreitzberg, C. K.....	Charleston.
Clark, J. C.....	Fairfield.
Clayton, W. S.....	Barnwell.
Clinkscales, R. W	Abbeville.
Cobb, E. E.....	Abbeville.
Coleman, R. W.....	Edgefield.
Copeland, J. I.....	Laurens.
Copes, H. E.....	Orangeburg.
Counts, C. H	Newberry.
Cross, B. B.....	York.

Crouch, S.....	Newberry.
Dannelly, G. W.....	Orangeburg.
Dantzler, S. F.....	Orangeburg.
Doten, J. L.....	Charleston.
Duff, D. E.....	Spartanburg.
Dukes, J. F.....	Orangeburg.
Dunn, L. B.....	Abbeville.
Durant, J. A.....	Sumter.
Edwards, R. O.....	Abbeville.
Elder, M. L.....	York.
Epperson, W. J.....	Sumter.
Fairey, L. W.....	Orangeburg.
Farmer, J. E.....	Anderson.
Felder, F. W.....	Orangeburg.
Ford, D. G. H.....	Spartanburg.
Garner, G. L.....	Darlington.
Geiger, G. F.....	Lexington.
Gibert, A. E.....	Abbeville.
Gibert, J. F.....	Abbeville.
Goggans, D. W.....	Edgefield.
Goodwin, J. P.....	Laurens.
Gramling, J. E.....	Orangeburg.
Grant, J. G.....	Marlboro.
Gray, W. C.....	Hampton.
Gresham, W. A.....	Greenville.
Hardin, D. E.....	Chester.
Harvin, L. L.....	Clarendon.
Haseldon, E. W. Jr.....	Georgetown.
Hastings, W. R.....	Edgefield.
Heffron, C. J.....	Charleston.
Henderlite, C. N.....	Barnwell.
Hodge, H. A.....	Clarendon.
Hodges, W. W.....	Orangeburg.
Hook, W. N.....	Orangeburg.
Hough, D. K.....	Kershaw.
Howze, W. K.....	Union.
Jervey, H. L.....	Charleston.
Jervey, T. D.....	Charleston.
Johnson, S. P.....	Laurens.
Keels, I. A.....	Sumter.
Killingsworth, J. M.....	Barnwell.
Knight, W. E.....	Greenville.
Ladd, C. M.....	Fairfield.
Langston, W. A.....	Edgefield.

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Lanier, O. M.....	Abbeville.
Lay, J. T.....	Oconee.
Lee, J. T.....	Abbeville.
Lewis, J. E.....	Oconee.
Linder, W. L.....	Union.
Lipscomb, J. W.....	Spartanburg.
Lofton, J. S.....	Charleston.
Lomax, S. J. T.....	Abbeville.
Long, W. H.....	Fairfield.
Lowrey, A. J.....	Oconee.
Lybrand, W. E.....	Lexington.
Martin, C. B.....	Spartanburg.
Mathis, A. J.....	Barnwell.
Mathis, W. G.....	Barnwell.
Mattison, J.....	Anderson.
Mauldin, P. O.....	Greenville.
Meares, W. P.....	Pickens.
Mellard, W. D.....	Colleton.
Middleton, R. H.....	Edgefield.
Miller, J. R.....	Spartanburg.
Mitchell, J. H.....	Spartanburg.
Moorer, L. A.....	Orangeburg.
Moorhead, L. J.....	Abbeville.
Morrison, J. B.....	Berkeley.
Murph, T. H.....	Orangeburg.
McAllister, W. C.....	Abbeville.
McCaskill, D. M.....	Kershaw.
McClure, J. F.....	Anderson.
McDowell, W. C.....	Kershaw.
McGougan, D. F.....	Horry.
McLees, W. F.....	Anderson.
McLendon, R.....	Darlington.
McMillin, R. C.....	Spartanburg.
Norris, A. P.....	Greenville.
Nowell, J. R.....	Abbeville.
Nunnamaker, A. S.....	Lexington.
Orvin, M. C.....	Berkeley.
Owens, A.....	Marion.
Page, F. M.....	Marion.
Parks, J. A.....	Spartanburg.
Parks, J. H.....	Greenville.
Parler, C.....	Colleton.
Partlow, B. P.....	Edgefield.
Pipkin, H. O.....	Williamsburg.

Pratt, J. H.....	Abbeville.
Price, M. N.....	Aiken.
Ready, J. M.....	Aiken.
Richey, H. A.....	Pickens.
Rickenbaker, O. H.....	Orangeburg.
Rodgers, W. Z.....	Marlboro.
Rutledge, S. G.....	Kershaw.
Sanders, J. O.....	Anderson.
Sawyer, G. S.....	Aiken.
Shealy, A. S.....	Edgefield.
Shuler, D. W.....	Orangeburg.
Simpson, T. S.....	Anderson.
Singletary, L. S.....	Williamsburg.
Sitton, J. B.....	Oconee.
Skelton, S. T.....	Anderson.
Smith, A. M.....	Newberry.
Smith, H. G.....	Oconee.
Smith, M. B.....	Abbeville.
Smith, M. H.....	Greenville.
Smith, R. M.....	Darlington.
Smith, W. H.....	Colleton.
Smith, W. R.....	Newberry.
Smyly, J. W.....	Colleton.
Sonntag, C. G.....	Barnwell.
Stacy, R.....	Spartanburg.
Steele, R. L.....	Fairfield.
Stewart, C. A.....	Newberry.
Stribling, J. C.....	Anderson.
Stribling, J. H.....	Anderson.
Stuckey, J. W.....	Darlington.
Stukes, J. F.....	Sumter.
Sullivan, J. O.....	Oconee.
Swett, W. N.....	Chesterfield.
Tate, L. E.....	Anderson.
Tatum, T. H.....	Orangeburg.
Thomas, L. P.....	Union.
Tolbert, G. R.....	Abbeville.
Toole, D. L.....	Aiken.
Toole, J. W.....	Aiken.
Turner, T. H.....	Barnwell.
Wall, A. L.....	Barnwell.
Wallace, J. P.....	Marlboro.
Warnock, J. E.....	Pickens.
Watson, L. E.....	Abbeville.

Watson, L. V.....	Anderson.
Watts, J. R.....	Newberry.
Way, A. S.....	Orangeburg.
Wells, F. G.....	Charleston.
Welsh, J. T.....	Chesterfield.
Williams, E. H.....	Newberry.
Williams, J. R.....	Edgefield.
Wilson, E. P.....	Chesterfield.
Wise, R. M.....	Barnwell.
Wofford, T. L.....	Spartanburg.
Woodside, A. L.....	Greenville.
Young, J. L.....	Laurens.



Lower Preparatory Class.

Name.	County.
Abernathy, W. L.....	York.
Acker, E. H.....	Anderson.
Anderson, J. R.....	Pickens.
Avinger, W. H.....	Berkeley.
Barmore, W. E.....	Abbeville.
Bannister, T. J.....	Marion.
Bell, W. A.....	Abbeville.
Bishop, B. T.....	Newberry.
Blakely, H. L.....	Laurens.
Blakeney, H. R.....	Chesterfield.
Blakeney, J. T.....	Chesterfield.
Boazman, J. B.....	Newberry.
Boggs, J. C.....	Pickens.
Boggs, W. H.....	Pickens.
Bolick, R. Y.....	Fairfield.
Brown, C. C.....	Chester.
Browning, C. M.....	Barnwell.
Browning, W. M.....	Barnwell.
Bruce, J. R.....	York.
Bruce, R. C.....	Kershaw.
Bryant, J. H.....	Colleton.
Caldwell, C. L.....	Abbeville.
Calhoun, C. A.....	Abbeville.
Cannon, C. E.....	Greenville.
Cauthen, M. B.....	Lancaster.
Chamblee, D. F.....	Anderson.
Chreitzberg, H. R.....	Charleston.
Clyburn, L. T.....	Kershaw.
Clyburn, T. L.....	Lancaster.
Clyde, W. L.....	Pickens.
Cochran, R. B.....	Oconee.
Cooper, A. M.....	Spartanburg.
Corley, G. H.....	Edgefield.
Crouch, H. W., Jr.....	Charleston.
Dantzler, J. L.....	Orangeburg.
Davenport, J. G.....	Laurens.
Davis, T. H.....	Abbeville.

Dennis, E. J.....	Berkeley.
Dodenhoff, J. B.....	Barnwell.
Draffin, S. W.....	York.
Drake, J. B.....	Anderson.
Drake, J. W.....	Anderson.
Dukes, B. A.....	Orangeburg.
*Dukes, J. H.....	Orangeburg.
Dubose, J. H.....	Darlington.
Earle, P. R.....	Anderson.
Eckel, A. W.....	Charleston.
Eidson, A. L.....	Aiken.
Etheredge, J. T.....	Lexington.
Fairey, G. W.....	Orangeburg.
Fairey, J. C.....	Orangeburg.
Farr, S. E.....	Greenville.
Foster, W. A.....	Spartanburg.
Floyd, W. T.....	Lancaster.
Gantt, M. W.....	Spartanburg.
Geiger, H. K.....	Lexington.
Gibert, C. S.....	Abbeville.
Gillespie, W. L.....	Marlboro.
Graham, R. C.....	Charleston.
Gilmer, J. C.....	Anderson.
Goodson, L. J.....	Barnwell.
Grant, E. D.....	Marlboro.
Grant, H. M.....	Chester.
Gray, J. D.....	Hampton.
Gray, J. J.....	Hampton.
Green, J. E.....	Clarendon.
Greene, J. G.....	Aiken.
Haithcock, D. M.....	Richland.
Haltiwanger, H. A.....	Edgefield.
Harleston, F. H.....	Charleston.
Hartzog, A. S.....	Barnwell.
Hatton, T. M.....	Laurens.
Hendricks, L. L.....	Pickens.
Holloway, J. L.....	Newberry.
Hough, I. C.....	Kershaw.
Hough, S. M.....	Kershaw.
Hunter, H. M.....	Pickens.
Hunter, R. H.....	Berkeley.
Hinson, G. W.....	Lancaster.

* Deceased.

Huffman, J. H.....	Lexington.
Ingram, S F.....	Chesterfield.
Ingram, T. L.....	Chesterfield.
Jackson, C. J.....	Sumter.
James, L. A.....	Sumter.
Jeffcoat, M.....	Lexington.
Jeter, T. C.....	Union.
Johnson, J. M.....	Edgefield.
Jordan, H. E.....	Horry.
Keller, I. L.....	Abbeville.
King, G. B.....	Abbeville.
King, S. P.....	Oconee.
Kinsler, J. H.....	Richland.
Langtord, C.....	Fairfield.
Legare, C. G.....	Charleston.
Lenoir, J. N.....	Sumter.
Leslie, T.....	Greenville.
Lewis, E. E.....	Oconee.
Lewis, F. A.....	Oconee.
Lewis, G. P.....	Oconee.
Lockwood, S. L.....	Charleston.
Lucas, W. H.....	Chester.
Lunney, R. J.....	Darlington.
Mappus, W. T.....	Charleston.
Meares, J. R.....	Pickens.
Messervy, W. T.....	Charleston.
Miller, J. L.....	Laurens.
Mims, P. V.....	Darlington.
Moorer, M. P.....	Colleton.
Mitchum, M. W.....	Berkeley.
McAllister, H. R.....	Abbeville.
McCarley, J. D.....	Richland.
McCarrell, V. W.....	Greenville.
McClure, C. M.....	Anderson.
McCord, E. M.....	Abbeville.
McCown, H. D.....	Florence.
McDaniel, J. J.....	Chester.
McDavid, J. A.....	Greenville.
McKenzie, W. N.....	Darlington.
McKeown, J. S.....	Chester.
McKown, J. G.....	York.
McPhail, J. A.....	Anderson.
Nettles, E. W.....	Sumter.
Nunnamaker, B. H.....	Lexington.

Oetgen, E. O	Charleston.
Parson, A. B.....	Laurens.
Pegues, E. S.....	Marlboro.
Pegues, W. L.....	Marlboro.
Reid, E. G. R.....	Barnwell.
Sartor, W. D.....	Union.
Saylor, W. L.....	Lexington.
Scales, L.....	Union.
Scarborough, H. S.....	Darlington.
Seacborough, R. J.....	Darlington.
Seastrunk, J. J.....	Lexington.
Seats, A. H.....	Richland.
Severance, J. W.....	Florence.
Shider, W. D.....	Colleton.
Simmons, Y.....	Charleston.
Singletary, E. M.....	Williamsburg.
Sitton, J. M.....	Anderson.
Sloan, S. M.....	Oconee.
Smith, H. B.....	Anderson.
Smith, W. R.....	Abbeville.
Spires, E. S.....	Orangeburg.
Stack, N.....	Richland.
Stevenson, E. B.....	Fairfield.
Stone, J. A.....	Edgefield.
Swearingen, W. E.....	Abbeville.
Taylor, J. H.....	Greenville.
Taylor, T. L.....	Abbeville.
Thomas, J.....	Colleton.
Thornton, C. N.....	Abbeville.
Tittle, A.....	Abbeville.
Toole, D. L.....	Aiken.
Vaught, E. A	Marion.
Verdin, C. S.....	Greenville.
Watkins, J. B.....	Greenville.
Welsh, W. B.....	Lancaster.
Whatley, J. R.....	Abbeville.
Whetsell, J. D.....	Orangeburg.
White, J. D.....	Sumter.
Whiten, J. A.....	Pickens.
Wilder, B. F.....	Sumter.
Williams, G. G.....	Orangeburg.
Wood, M. E.....	Greenville.
Yoe, W. S.....	Abbeville.

Military Organization.

COLONEL OF THE REGIMENT AND COMMANDANT OF CADETS.

Lieutenant T. Q. DONALDSON, Jr., Seventh U. S. Cavalry.

FIRST BATTALION.

Major E. M. BLYTHE.

SECOND BATTALION.

Major A. SHANKLIN.

COMMISSIONED STAFF.

A. M. CHREITZBERG, Cadet Lieutenant and Adjutant.

M. L. SIFLY, Cadet Lieutenant and Quartermaster.

NON COMMISSIONED STAFF.

J. H. MOORE, Cadet Sergeant Major.

E. M. DUPRE, Cadet Q. M. Sergeant.

R. I. WOODSIDE, Cadet Color Sergeant.

COMPANY A.

R. E. Lee,.....Captain.

R. H. Welch,.....1st Lieutenant.

J. G. Simpson,.....2d Lieutenant.

J. L. Briggs,.....1st Sergeant.

SERGEANTS.

G. P. Boulware,

P. G. Langley,

A. F. Foster,

B. F. Robertson.

CORPORALS.

C. B. Dowling,	R. W. Nichols,
J. B. Smith,	T. R. Vogel.
W. Waters,	

COMPANY B.

O. M. Pegues,.....	Captain.
C. M. Furman,.....	1st Lieutenant.
H. J. Rawl,.....	2d Lieutenant.
G. G. Steele,.....	1st Sergeant.

SERGEANTS.

W. R. Fitts,	R. G. Hamilton,
V. P. Bowers,	B. M. Aull.

CORPORALS.

H. J. Hammett,	J. R. Inman,
W. G. Peterkin,	C. H. Stubbs.
G. H. Swygert,	

COMPANY C.

W. L. Felder,.....	Captain.
W. W. Wardlaw,.....	1st Lieutenant.
B. R. Tillman, Jr.,.....	2d Lieutenant.
O. F. Speck,.....	1st Sergeant.

SERGEANTS.

C. H. Snider,	E. P. Earle,
R. D. Young,	J. B. Wiggins.

CORPORALS.

W. T. Brock,	R. W. Collins,
J. E. Pickett,	J. Sprott.
J. E. Taylor,	

COMPANY D.

I. M. Mauldin,.....	Captain.
D. L. Smith,.....	1st Lieutenant.
L. E. Dean,.....	2d Lieutenant.
J. S. Fair,.....	1st Sergeant.

SERGEANTS.

J. G. Holloway,	F. L. Bryant,
P. O. Stribling,	A. J. Tindal.

CORPORALS.

C. Burriss,	F. N. Jones,
P. W. Moore,	J. B. Scurry.
W. Walter,	

COMPANY E.

W. H. Carpenter,	Captain.
T. S. Moorman,	1st Lieutenant.
W. W. Klugh,	2d Lieutenant.
T. H. Tuten,	3d Lieutenant.
S. T. Carter,	1st Sergeant.

SERGEANTS.

B. Doar,	J. T. Bradley,
G. W. Hart,	J. H. Hook.

CORPORALS.

J. E. Brogdon,	J. S. Garris,
W. P. Parks,	J. P. Quarles.
R. S. Smith,	

COMPANY F.

H. G. Cliff,	Captain.
C. D. Napier,	Supernumerary Captain.
F. G. Tompkins,	1st Lieutenant.
L. A. Sease,	2d Lieutenant.
T. W. Cothran,	1st Sergeant.

SERGEANTS.

P. H. Gooding,	A. F. Dunn,
E. P. Brown,	E. H. Everett.

CORPORALS.

W. T. Ellerbe,	J. G. Evans,
W. H. Glenn,	E. E. Rosborough.
J. C. Self,	

Included in the above organization is a cadet band of fifteen pieces.

Cadet Drum Major, J. E. Edwards.

Clemson

Agricultural and

Mechanical College

OF

South Carolina.

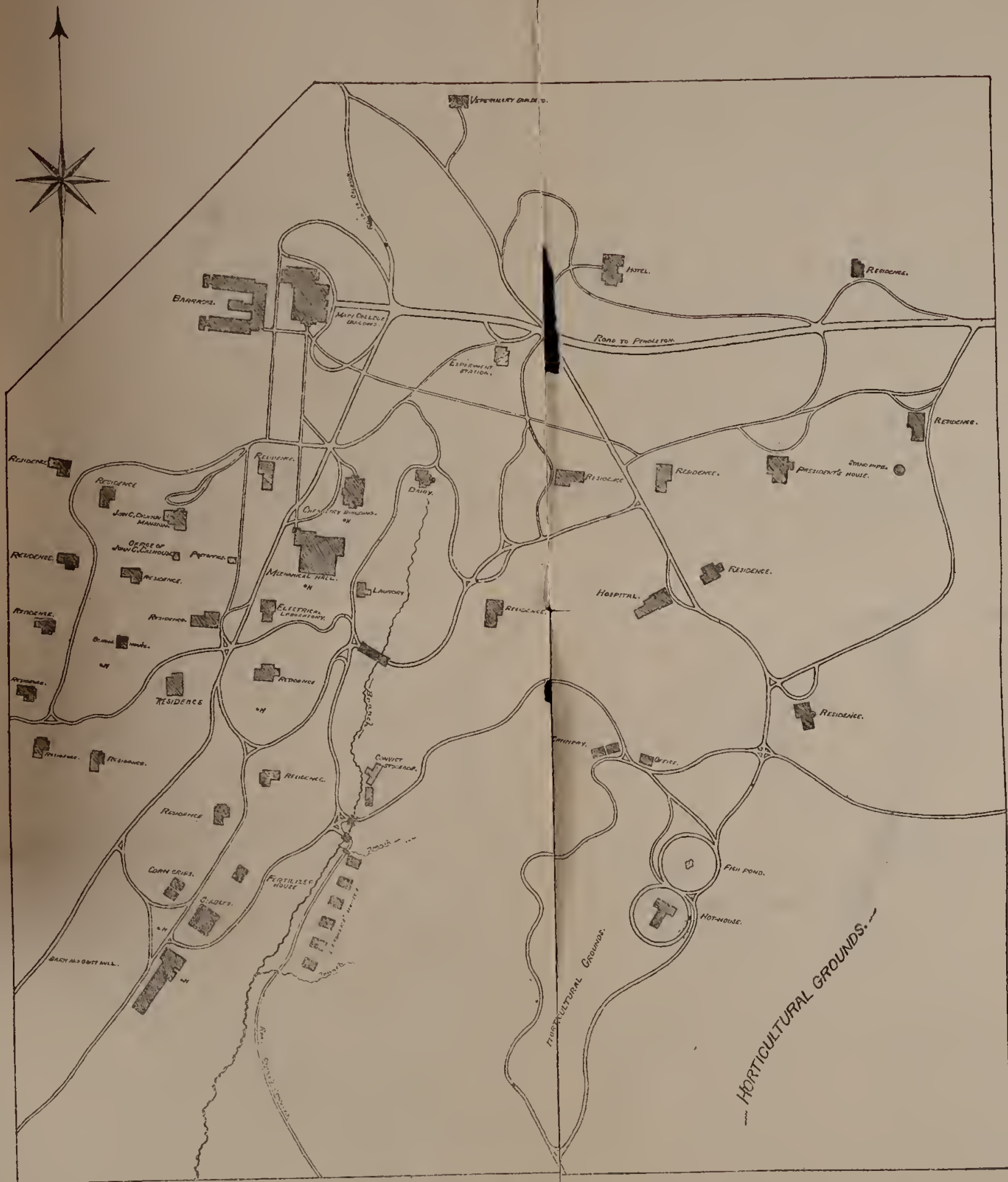
1896.

Freight and Express Office :—

CALHOUN, S. C.

Telegraph and Post Office :—

CLEMSON COLLEGE, S. C.



MAP OF PART OF
CLEMSON COLLEGE GROUNDS
 COMPILED FROM SURVEYS BY COLLEGE CLASSES,
 BY
 P. T. BRODIE,
 1906.

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Origin and Objects.

A Convention of the farmers of South Carolina passed, in 1886, a resolution advocating the establishment of an Agricultural College. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who died in 1888, leaving as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and about \$80,000 in other securities for the purpose of establishing an Agricultural College.

The Legislature passed an act which became a law in November, 1889, accepting the bequest. The College opened July 6, 1893, with an enrollment during its first session of 446 students.

The object of the College, in conformity with the Acts of Congress and the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and application of the sciences bearing upon agriculture and mechanics; and to give the breadth and the culture necessary for a rounded education, a liberal course is provided in history, in economics, and in English.

It is considered of supreme importance that students should be taught, not only theoretic methods, but practical work in these methods. Young men need to learn to work. With this end in view, a certain amount of manual labor is required of all students. In addition to this, they are encouraged to do volunteer work, the remuneration from which enables many indigent young men to gain an education.



BOARD OF TRUSTEES.

HON. R. W. SIMPSON, PRESIDENT,	Pendleton.
SEN. B. R. TILLMAN,	Trenton.
HON. R. E. BOWEN,	Briggs.
HON. D. K. NORRIS,	Hickory Flat.
HON. J. E. BRADLEY,	Hunters.
HON. M. L. DONALDSON,	Greenville.
HON. J. E. WANNAMAKER,	St. Matthews.
HON. W. H. MAULDIN,	Hampton.
HON. J. E. TINDAL,	Felder.
HON. H. M. STACKHOUSE,	Donoho.
HON. D. T. REDFEARN,	Mt. Croghan.
HON. JESSE H. HARDIN,	Chester.
GOV. W. H. ELLERBE,	Columbia.
DR. P. H. E. SLOAN, SEC'Y AND TREAS.	Clemson College.



FACULTY.

E. B. CRAIGHEAD,
President.

M. B. HARDIN,
Professor of Chemistry.

C. M. FURMAN,
Professor of English.

W. S. MORRISON,
Professor of History.

E. B. FULLER,
*Capt. 7th Cavalry, U. S. A.,
Professor of Military Science and Tactics,
Instructor in Physics.*

S. TOMPKINS,
Professor of Mechanics.

Walter J. QUICK,
Professor of Agriculture.

J. G. CLINKSCALES,
Professor of Mathematics.

J. V. LEWIS,
Professor of Geology and Mineralogy.

R. N. BRACKETT,
Assistant Professor of Chemistry.

P. T. BRODIE,
*Assistant Professor of Mathematics
Instructor in Civil Engineering.*

J. S. McLUCAS,
Assistant Professor of English.

W. E. A. WYMAN,
*Assistant Professor of Agriculture,
Instructor in Veterinary Science.*

J. W. HART,
*Adjunct Professor of Agriculture,
Instructor in Dairying.*

*Appointed to commence in 1897.

F. S. SHIVER,

Instructor in Chemistry.

*ALEXANDER P. ANDERSON,

*Assistant Professor of Agriculture,
Instructor in Botany and Bacteriology.*

J. F. C. DUPRE,

*Assistant Professor of Agriculture,
Instructor in Horticulture.*

W. M. YAGER,

Instructor in Drawing.

ALBERT BARNES,

*Instructor in Woodwork and Experimental
Engineering.*

T. W. WRIGHT,

Instructor in Machine Shop Work.

R. T. V. BOWMAN,

Instructor in Forge and Foundry Work.

W. M. RIGGS,

Instructor in Electricity.

A. SHANKLIN,

Tutor in Mathematics.

*R. E. LEE,

Tutor.

*W. W. KLUGH,

Tutor.

A. M. REDFEARN,

Surgeon and Instructor in Physiology.

*Appointed to commence in 1897.

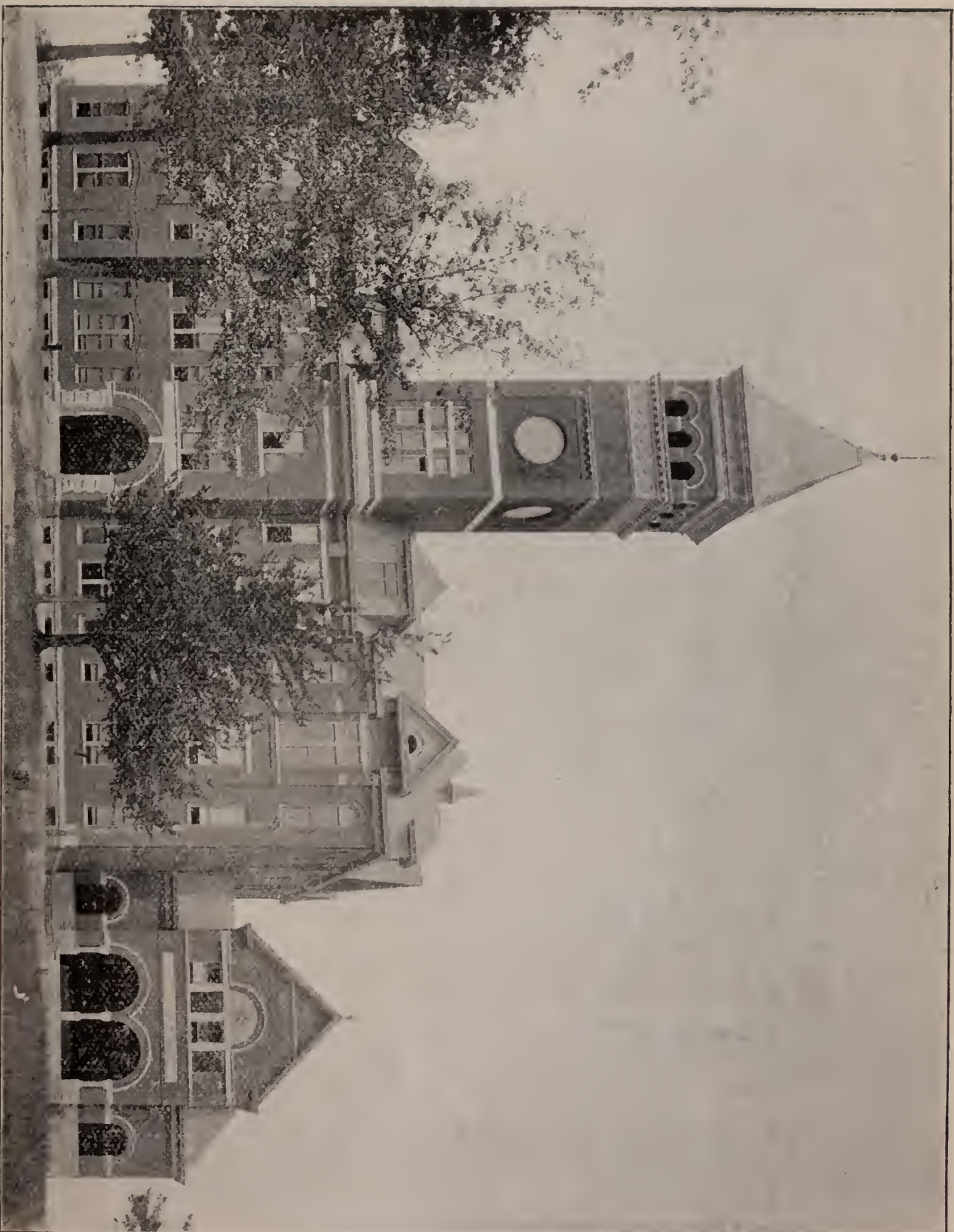


The Faculty of this College deplore the death of their colleague, Prof. William L. McGee, and devote this page to his memory.

Born in Holmes County, Mississippi, March 22, 1862; educated at the A. & M. College of his native State; 1885-1894 Instructor in his Alma Mater; elected assistant principal in agriculture in this College in February, 1894, and promoted to the full professorship in February, 1896. He died at the post of duty, October 22, 1896.

Energetic, amiable, trustworthy and courageous—a bright future opened before him. But an all-wise Providence has seen fit to remove him from the activities of this life, and we submissively inscribe this tribute to his memory.





MAIN COLLEGE BUILDING.

Officers of The Agricultural Experiment Station.

Station Staff.

E. B. CRAIGHEAD,	Director.
WALTER J. QUICK,	Vice Director and Agriculturist.
M. B. HARDIN	Chief Chemist.
J. F. C. DUPRE.	Horticulturist.
W. E. A. WYMAN.	Veterinarian.
J. W. HART	Dairyman.
J. V. LEWIS.	Geologist.
R. N. BRACKETT.	Assistant Chemist.
F. S. SHIVER	Assistant Chemist.
JOHN THOMPSON	Assistant Chemist.
C. C. McDONNELL	Assistant Chemist.
J. P. LEWIS.	Foreman of Farm.
JOHN N. HOOK.	Secretary of Staff.

Board of Fertilizer Control.

HON. J. E. TINDAL.	Felder, S. C.
HON. J. E. WANNAMAKER	St. Matthews, S. C.
SENATOR B. R. TILLMAN	Trenton, S. C.
J. P. SMITH, SECRETARY,	Clemson College, S. C.

Agricultural Department.

PROFESSOR QUICK.

Pure Agriculture.

The following topics are studied by lectures or text-books :

FRESHMAN CLASS : Second term, three hours a week.

Elementary principles underlying Agriculture with a brief course on farm live stock.

SOPHOMORE CLASS : First term, three hours a week.

Breeds of Live Stock with special reference to their adaptability to the South. Principles of breeding and selection.

SECOND TERM : Three hours a week.

Soil water, surface and subsoil drains, manures, fertilizers, hay and pasture grasses, hay making, rotations, southern farm crops.

JUNIOR CLASS : First term, three hours a week.

Soil physics, implements, improved machinery, farm buildings, laying out of farm, history of agriculture.

SENIOR CLASS : First term, three hours a week.

Stock feeding, study of foods, compounding of rations, study of Experiment Station bulletins, general farm management.

AFTERNOON WORK : The students of the agricultural sections will be required to perform from two to four hours a week of practice work on the farm. This will be in direct line with the work of the class-room. It will consist of practice in the handling of tools and teams, preparation of soil and planting and cultivating, handling improved machinery, harvesting hay and the ordinary farm crops, the management of dairy stock and the manipulation of milk and butter and cheese making. This labor will be altogether educational and students will not be paid for it. In addition to this, students of the agricultural depart-

ment will be allowed to labor from six to ten hours a week on the farm, in the garden, at the barns or in the dairy. This outside labor will, as far as practicable, be made an exemplification of the work of the class room. For this labor faithfully performed, students will be paid at the rate of eight cents an hour.

As a means of illustration, the department has a farm of some four hundred acres, a good equipment of implements, improved haying machinery, commodious barns for horses and cattle, six large silos, eighty cattle, including three pure breds, and a practical dairy in working order.

Horticulture.

ASSISTANT PROFESSOR DUPRE.

The work in this department is largely practical. Theoretical instruction is given, twice weekly, in the second term of the Sophomore year, and during the larger part of the Senior year.

The work is sub-divided as follows :

Horticulture proper, including home gardening and truck farming, pomology, viticulture, floriculture, canning and experimental work.

The student is required to labor, and is thereby taught, by actual experience, the best methods of preparing, cultivating, and fertilizing the soil ; storing, shipping, and canning fruits and vegetables ; pruning and training trees and vines ; propagating by seeds, grafts, buds, layers and divisions. He is also given instructions in the use of hot beds, cold frames and mulching, together with the art of forcing, crossing and hybridizing. Throughout the entire course this instruction is supplemented by lectures on soils, fertilizers, how plants feed, etc.—no text-books are used.

The experimental garden, orchard, and vineyard, together with the truck farm, greenhouse and cannery, give ample means of illustration for this department.

Botany.

ASSISTANT PROFESSOR ANDERSON.

Freshman Class.

The work during the year consists in the study of systematic structural botany, the text-book used being Wood's Botanist and Florist. The object of this term's work is to enable students to become familiar with the structure and organs of the higher plants by careful study of the specimens themselves; to learn something of the system of classification; to acquire the habit of close and accurate observation, and to learn the names of some of our most common flowering plants.

Junior Class.

Four hours per week during the first term of the year will be devoted to the study of physiological botany. The work will consist largely in the use of the compound microscope in the examination of cell structure and in the preparation and study of slides by the student himself, the result of his observation being recorded by means of drawings and notes.

Senior Class.

Elective work will be given in botany during the second term of the year. This will consist in the study of cryptogams and fungi, special attention being given to a study of the diseases of plants. Opportunity will be given for the study of grasses and clovers, and of all the forage plants best adapted to this region.

Dairying.

ADJUNCT PROFESSOR HART.

Instruction in dairy science will be given in the second term of the Junior year.

Class room instruction, three hours per week; work at stable and dairy building, two to four hours per week.

The course of instruction will include the following topics :

Dairy cattle in relation to agriculture ; the special dairy cow ; selection of cows ; raising calves ; management of cattle ; milking ; milk-testing ; pasteurizing and sterilizing ; cream, and the methods of obtaining it from milk ; hand and power cream separators ; making and marketing butter and cheese ; disposing of the by-products of the dairy ; dairy-buildings ; pedigrees and herd-books.

The College herd, comprising about ninety head of pure-bred, grade and native cattle, will be used in teaching.

In the commodious and well equipped dairy building, opportunity will be afforded students to learn how to make butter and cheese of the highest quality with utensils used in large or small dairies, creameries, and cheese factories.

Veterinary Science.

ASSISTANT PROFESSOR WYMAN.

The aim of the Veterinary Department is to acquaint the agricultural students with the principles of Veterinary Medicine. The course extends over the Junior and the Senior years.

Junior Class.

The first term is devoted to the study of comparative Anatamy, Physiology, Pathology. The second term comprises the study of Materia Medica and Obstetrics. During this term the student is required to devote six weeks to dissections. For this purpose the college has fitted up and properly equipped a dissecting room.

Senior Class.

The first term is devoted to the Principles and Practice of Veterinary Surgery, main stress being laid upon examination of animals for soundness or for purchase. The second term consists of lectures on Veterinary Medicine, the most important diseases of the domesticated animals are discussed, their nature, causes, symptoms and treatment. Contagious

diseases and their means of prevention receive careful attention.

Clinical Instruction.

Since it is of the greatest importance to make the course as practicable as possible, the time being too short for a thorough education in Veterinary Science, a free clinic is held once a week for a whole afternoon. To this clinic an abundance of sick and lame animals are brought. The students in this way personally observe the various diseases and are taught in a practical manner the putting up of medicines and their administration. The students of the Senior Class are also required to operate and prescribe.

Department of Chemistry.

PROFESSOR HARDIN.

ASSISTANT PROFESSOR BRACKETT.

INSTRUCTOR SHIVER.

Sophomore Class.

Three hours a week.

General Chemistry, Inorganic Chemistry, and the leading facts and principles of Organic Chemistry. The Laboratory practice, four hours a week, consists in introductory work, and Qualitative Analysis.

Text-books : Roscoe's Elementary Chemistry.

Jones' Junior Course of Practical Chemistry.

Junior Class.

Two hours a week.

Industrial Chemistry : Air, water, food, clothing, building materials, glass, porcelain, etc., and the metallurgy of gold, silver, copper, iron, etc. The laboratory practice, eight hours per week, and optional all day Saturdays, consists in qualitative and quantitative analysis, and assaying.

Text Books : Wagner's Chemical Technology, Jones' Junior Course of Practical Chemistry, Fresenius' Qualitative

Analysis, Fresenius' Quantitative Analysis, Brown's Assaying.

Senior Class.

Two hours a week.

Agricultural Chemistry: The composition of plants, the sources of plant food, the composition of soils, the improvement of soils by chemical means, the composition and manufacture of fertilizers, the composition of feeding stuffs, and the products of the dairy. The laboratory practice consists in the quantitative analysis of waters, fertilizers, ashes of plants, soils, cattle foods, dairy products, etc. Hours are the same as in the Junior class.

Text Books: Johnson's Elements of Agricultural Chemistry, and Bulletins of United States Department of Agriculture containing methods of the Association of Official Agricultural Chemists.

Books of Reference: Deherain's Traite de Chimie Agricole, Storer's Agriculture in some of its relations with Chemistry, and Wiley's Agricultural Analysis.

The chemical library is supplied with valuable works of reference on theoretical and applied chemistry, and with American and foreign journals.

The Sophomore course is required of all students; the other courses are required of students in Chemistry and Agriculture only.

Geology and Mineralogy.

PROFESSOR LEWIS.

PHYSICAL GEOGRAPHY—Junior Class, 3 hours a week, 2d half Year.

This course is supplemental to the text-books on this subject generally used in preparatory schools; and is intended as a preparation for the study of geology proper. The subjects treated are: The earth as a planet. The atmosphere: temperature, moisture, movements, and storms. Weather and climate. The sea: ocean basins, waves, currents, and tides. The land: continental forms, denudations,

drainage, topographic forms, especially in their relations to human industries. Life and its distribution.

GENERAL GEOLOGY.—Senior class, 3 hours a week, 1st half-year.

The aim of this course is to present, as fully as the available time will allow, an account of dynamical, structural, and historical geology, with special reference to the development of the North American Continent. The influences of geologic phenomena on man are carefully pointed out, particularly in the consideration of soil-formation and characteristics, the agents of erosion, transportation, and deposit, and the resultant topographic forms.

MINERALOGY.—Senior class, 1 hour a week and 4 hours laboratory work, throughout the year.

The class-room work in mineralogy deals briefly with the elements of crystallography; and this is followed by study of the chemical and physical properties of all the more common minerals. Special attention is given the useful minerals and those forming the chief constituents of crystalline rocks. In the laboratory, students become familiar with crystal forms by the use of models and natural crystals and the construction of crystal drawings. Training in chemical and physical mineralogy is given by testing known minerals as they are studied in the class, and by extensive practise in determining unknown specimens.

ECONOMIC GEOLOGY.—Senior class, 2 hours a week, 2d half-year.

This course gives a brief but comprehensive survey of the characters, modes of occurrence, distribution, and methods of mining the metals and metalliferous ores; also the geology of the useful non-metallic products. Chief among the latter are: Coal, oil, and gas; water supplies, soils and mineral fertilizers, abrasive and refractory materials, architectural and engineering stones, salts, pottery clays, gems and precious stones, mineral waters.

NOTE.—In 1896, owing to the time and labor consumed in the installation of fixtures, specimens, and other equipment, instruction was given in geology and mineralogy to the senior class only; and the course in Economic Geology was omitted.

Department of Mathematics.

PURE MATHEMATICS.

PROFESSOR CLINKSCALES.
ASSISTANT PROFESSOR BRODIE.

This course presupposes a thorough knowledge of Arithmetic and of Algebra through Quadratics.

Freshman Class.

FIRST TERM.—The first term of the Freshman year is devoted to the study of COMPLETE ALGEBRA—Quadratics [reviewed]; Simple Indeterminate Equations; Inequalities; Theory of Exponents; Logarithms; Proportion and Variation; Series; Binominal Theory; Continued Fractions; Theory of Limits; Intermediate Co-efficients; Exponential Theorem; Equations in General.

SECOND TERM.—PLANE GEOMETRY—Rectilinear Figures; Circles; Similar Figures; Comparison and Measurement of Surfaces of Polygons; Regular Polygons and Circles. Special attention is given to the formation on the part of students of the habit of clear and accurate reasoning and concise expression.

Sophomore Class.

FIRST TERM.—HIGHER ALGEBRA completed. SOLID GEOMETRY—Planes and Solid Angles; Polyhedrons, Cylinders and Cones; Spheres, Spherical Polygons and Pyramids, Volume.

SECOND TERM.—PLANE AND SPHERICAL TRIGONOMETRY—Functions of Acute Angles; Right Triangle; Goniometry; Oblique Spherical Triangle; Applications.

PLANE SURVEYING.—This course includes the general principles and fundamental operations of plane surveying, with compass, level and transit, furnishing ample training for the needs of agricultural students, and a good preparation for the higher work of the engineering courses.

Junior Class.

FIRST TERM.—ANALYTICAL GEOMETRY—Points and Right Lines in a plane; Points and Right Lines in Space; Trans-

formation of Coordinates ; Circle ; Parabola ; Ellipse ; Hyperbola ; Higher Plane Curves ; Surfaces of Revolution.

SECOND TERM.—DIFFERENTIAL CALCULUS—Differentiation or Algebraic Functions ; Transcendental Functions ; Successive Differentiation and Development of Functions ; Functions of two Variables ; Tangents and Asymptotes ; Maxima and Minima ; Radius of Curvature ; Evolutes and Involutives ; Envelopes.

INTEGRAL CALCULUS—Elementary forms of Integration ; Rational Fractions ; Integration of Irrational Fractions ; Successive Reduction ; Integration of Functions of two Variables ; Lengths of Curves ; Areas of Plane Curves ; Rectification of Curves ; Cubature of Volumes.

The Mathematical Course for Agricultural-students stops at the close of the Sophomore year.

Applied Mathematics.

CIVIL ENGINEERING.

ASSISTANT PROFESSOR BRODIE.

All regular students take Plane Surveying during the second term of the Sophomore year. [See Mathematical course.]

Junior Class, both terms.—Use of transit, stadia, solar compass ; Plane Table ; Triangulation ; Topography ; Geodesy ; City Surveying. Special attention is given to the accuracy of field work and clearness and neatness of representation.

Theory of Railroad Construction ; Simple and Compound Curves ; Switches ; Turnouts ; Setting of Slope Stakes ; Calculation of Earth-work ; Theory of Economic Location.

Senior Class, both terms.—Survey for a line of railway a mile or more in length. The necessary maps, profiles and cross-sections are prepared. Curves are laid out, levels taken, and all the needed measurements made to enable the student to compute the excavations and embankments and estimate the cost of construction.

BRIDGE BUILDING.—Stability of walls and arches ; strength of materials ; Classification of strains and mathematical and graphical discussion of same ; joints, fastenings, &c.

DEVELOPMENT OF WATER POWERS.—The principles of hydraulics and hydrostatics and of the flow of water are taught both theoretically and practically. Turbines and other water wheels ; construction of water works for towns and cities ; building of dams and reservoirs and computation of their stability ; irrigation.

Mechanical Department.

S. TOMPKINS, Mechanical and Electrical Engineering.
 E. B. FULLER, Physics.
 T. W. WRIGHT, Machine Shop Work.
 W. M. YAGER, Drawing.
 R. T. V. BOWMAN, Forge and Foundry Work.
 ALBERT BARNES, Wood Work and Mech. Laboratory.
 W. M. RIGGS, Electrical Laboratory.

APPLIED MECHANICS.

Junior Class, two hours per week, both terms.—*Statics* : Graphical analysis of stresses in framed structures, bridges, roof trusses, arches, etc.

MECHANICS OF MACHINERY.—Relative velocities of machine parts, links, spur, bevel and worm gears, etc.,

Senior Class, two hours per week, both terms.—Strength of materials, work, power, friction, machine design, etc.

PHYSICS.

Sophomore Class, both terms.—Properties of matter, velocity, acceleration, force, mass, weight, work, energy, power, etc.

Junior Class, both terms.—Sound, Heat, Light, etc.

TEXT-BOOKS : Gage's Principles of Physics, Lock's Dynamics.

DRAWING.

Freshman Class, both terms.—Graded exercises in free hand drawing from natural objects, beginning with the simplest geometrical forms and extending to the sketching of simple machinery, fruits, grasses, flowers and animals. Principles of dimensioning and reading mechanical drawings. Exercises in the use of instruments, making simple working drawings, shading and lettering.

Sophomore Class, both terms.—Drawings in ink, practical geometrical problems relating to lines, angles, circles, tangents, polygons, and such curves as the ellipse, cycloid, helix, etc. Making complete mechanical drawings of pieces of machinery from working models. Tracing and making blue prints. The study of Descriptive Geometry begins with definitions and elementary principles and extends to the solution of problems with points, lines, planes, intersection and development of surfaces, perspective, shades and shadows.

Junior Class, both terms.—Designing and making complete working-drawings of parts of machinery and structures in accordance with the principles taught in the theoretical courses of applied mechanics.

Senior Class, both terms.—Designing and making detailed working-drawings of special machines and structures involving the application of the principles taught in the theoretical course of mechanical and electrical engineering. Thesis work.

FORGE AND FOUNDRY WORK.

Freshman Class, both terms.—The course in forging begins with the names of tools, building and managing fires. Graded exercises are then taken up, starting with a very simple case and extending over the forging of iron and steel : drawingout, upsetting, bending, twisting ; welding of iron, of steel, of steel and iron ; annealing, hardening, tempering, case-hardening, bluing, browning, etc.

Sophomore Class, both terms.—Names and use of tools, tempering, moulding sand, moulding and patching of moulds. Patterns of various shapes and sizes are used to illustrate the different principles of moulding, venting, and gating ; the

use of rizers, pressure gates, skim gates, gaggers, chaplets, facing sands, and feeding of castings; core making, grading and mixing of iron; charging and managing the cupola, pouring, skimming, etc. Four weeks is devoted to work in the brass foundry. The practical work is supplemented by a course of lectures.

WOOD WORK.

Freshman Class, both terms.—Names and uses of tools, graded exercises in carpentry, joinery, and turning; polishing and finishing of articles. Use of simple wood-working machinery.

Sophomore Class, both terms.—Study and use of wood-working machinery; graded exercises showing use of and reason for draft, halving, core prints, and boxes as employed in pattern making.

Patterns for machines under construction.

Senior Class, both terms.—Construction of apparatus for laboratory experimentation; advanced wood-working. Use of planer, jointer, moulding machine, etc.

MACHINE SHOP.

Junior Class, both terms.—The course of instruction begins with exercises in chipping, filing, fitting, polishing, scraping and other bench work; next follows machine work in drilling, turning, boring, threading, planing, shaping, milling, etc. This course of exercises is designed to train the student in the important fundamental operations, and in the manipulation of machines in a great variety of ways.

After completing the course of exercises, work is begun in constructing tools, machines, &c., from the simplest up to and including such machines as small engines, dynamos, etc.

Senior Class, both terms.—The senior year is devoted to more advanced work in the construction of apparatus and machinery. No regular course is followed, but a certain standard of work as to quality and quantity is required.

Mechanical Laboratory.

Junior Class, both terms.—Lectures on the fundamental principles of Mechanical and Experimental Engineering, covering the study of materials used for construction in engineering work.

Laboratory practice, involving the study, use, and calibration of engineering instruments ; tests of building materials ; measurements of water power, of power transmitted by belting and shafting.

Senior Class, both terms.—Lectures on the theory and use of testing machines, calorimeters, gas and steam engines, steam pumps and injectors ; also on the necessary arrangements for testing of power plants.

Laboratory work. Indicator practice, and the computation of power from diagrams. Tests of lubricants, efficiency tests of boilers, engines, and heating plants. Construction of special apparatus. Original scientific investigation.

ELECTRICITY.

Junior Class, both terms.—Lecture room work covers elementary principles of electricity and magnetism.

The laboratory work consists of the setting up and management of primary and storage batteries, electrical measurements, verification of Ohm's law, electrolytic and magnetic experiments and measurements, calibration of instruments, etc., etc.

Senior Class, both terms.—Lecture room work covers advanced theory of electricity and magnetism. Laboratory work consists of practical work with the ballistic galvanometer in determining magnetic permeability, etc. ; measurements of power and efficiency of generators and motors, etc. ; taking characteristic curves, construction of instruments, practical winding of armature models, etc., etc.

MECHANICAL ENGINEERING.

Senior Class, both terms.—While a large part of the whole four year's course aims to acquaint the student with

the arts and sciences underlying mechanical engineering it is the special aim of this portion, coming as it does in the final year, to bring together and utilize in a practical way all the previous training of the course. Much new matter is at the same time studied and in the combined application of the whole, the student gains some acquaintance with the varied nature of engineering problems as they arise in practice. The chief subjects taken up are the thermodynamics of steam and gas engines and refrigerating machines; design, construction, operation and testing engines, boilers, etc., water wheels and power transmitting machinery. Plans, specifications, estimates, contracts, etc. Special engineering problems. Thesis work.

ELECTRICAL ENGINEERING.

Senior Class, both terms.—This course is designed mainly for students who contemplate becoming professional electrical engineers. While it involves much on the theory of electricity and magnetism not already given, the course is largely taken up with the discussion and solution of various engineering problems involving the application of principles previously taught in physics, mechanics, electricity, etc.

These problems relate to the design, construction, installation, operation, repair, testing, etc., of generators, motors, switchboards, pole lines, storage batteries, etc., also to estimates, plans, specifications, contracts, etc., for electrical plants, machinery and equipments of many varieties.

The prevailing idea of the course is to acquaint the student as far as practicable with the nature of problems that are likely to occur in practice.

Department of English.

PROFESSOR FURMAN.

ASSISTANT PROFESSOR McLUCAS,

The purpose of the course in English is to enable the student to acquire the power of correct and terse expression,

and to enable him to read with appreciation the best literature of the language.

Freshman Class, five hours a week.—Lockwood's Lessons in English; Strang's Exercises; Reading from Irving and Scott; Exercises in Composition.

Sophomore Class, two hours a week.—Clark's Rhetoric; Studies in Macaulay, Lowell, and Addison; Essays.

Junior Class, two hours a week.—Pancoast's English Literature; Studies in Froude, Thackeray, Carlyle, and Ruskin; Hawthorne & Lemmon's American Literature.

Senior Class, two hours a week.—FIRST TERM.—Study of Shakespeare; Dowden's Primer, and the reading of two plays.

SECOND TERM—Prose Criticism; Text-books; Brewster's Specimens of Narrative; Baldwin's Prose Description.

Orations during the entire year.

Parallel readings are required throughout the course.

Department of History.

PROFESSOR MORRISON.

Freshman Class, three hours a week.—FIRST HALF YEAR—Weber's History of South Carolina.

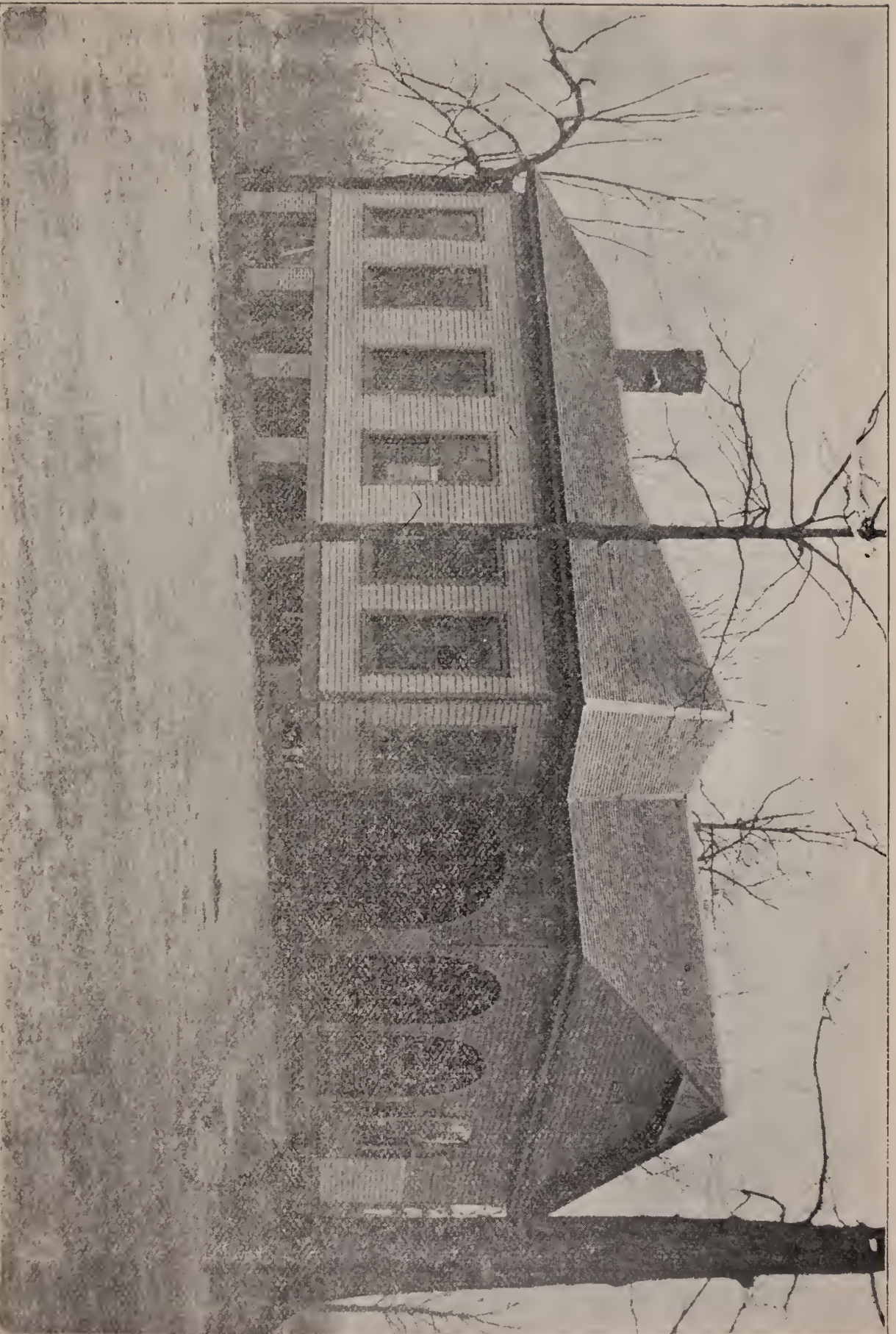
SECOND HALF YEAR—Tilden's Commercial Geography.

Sophomore Class, two hours a week.—FIRST HALF YEAR—True and Dickinson's Our Republic.

SECOND HALF YEAR—Myer's General History, begun.

Junior Class, three hours a week.—Myer's General History, completed.

Senior Class, three hours a week.—Walker's Political Economy, briefer course.



EXPERIMENT STATION OFFICES.

Military Department.

CAPTAIN FULLER.

The course in military instruction, as prescribed and followed, is both theoretical and practical.

The practical instruction includes infantry drill, in the school of the soldier, the company, the battalion, and the evolutions of the regiment, in both class and extended order, target practice, and guard duty, and in the manual of the piece in light artillery drill.

Practice is also given in signaling with the flag, torch and heliograph.

The cadets are subject to military discipline at all times, and all, except those physically disqualified, are required to take part in drill, guard duty and other military exercises.

The theoretical instruction, given by recitations and lectures, includes the subjects of organization and administration, grand and minor tactics, logistics, castrametation, military engineering, gunnery and pyrotechnics, military history, etc., etc.

An hour each week, for the Senior and Junior classes, is devoted to the theoretical course, and at least three hours each week to practical instruction, in addition to the guard duty.

In addition to the benefit which the general government expects and does derive from the military instruction given at this and other colleges, it is believed that the discipline enforced, the habits of punctuality and obedience inculcated, the bearing and appearance of those being instructed, and also the habit of directing and commanding others, which nearly all in course of time get, is of immense benefit to the students individually.

The organization of the corps of cadets is regimental, consisting of two battalions of three companies each, each battalion being commanded by one of the instructors of the College, having the local rank of Major.

This organization permits the practical instruction being carried to a greater extent than a single battalion formation would allow.

The College uniform is of cadet grey of the West Point pattern, except that the College button is used, and at the contract prices costs as follows :

The dress coat \$9.25, the blouse \$5.75, the trousers \$5.15, the cap \$1.35 and the pompon 28 cents, total \$21.78.

For military full dress, the cadet officers wear a plume and sash, and the non-commissioned officers and privates a pompon.

This uniform is made of the best Charlottesville mills goods, is neat, and, considering the make and material, is very inexpensive.

The fare at the Mess Hall is good, and there has always been an abundance of substantial food supplied at an exceedingly low cost to the students.

The kitchen is well equipped with the best modern appliance for cooking in large quantities.

In addition to the special regulations of the military department, cadets are subject to the following general regulations :

Cadets will at all times be respectful in their bearing to the professors and other officers of the College.

The practice known as hazing is positively forbidden, and any cadet indulging in this practice will be expelled from the College.

Cadets are positively forbidden to use or to have in their possession intoxicating liquors of any description.

The use of tobacco by cadets, in any form, is prohibited. Profanity is positively forbidden.

Cards and all games of chance are positively forbidden.

All combinations of cadets for the purpose of conveying censure or praise to one of their number is prohibited. Also, all combinations to defeat the purpose of any regulation of the College.

Fighting is positively forbidden. If any cadet shall consider himself wronged by another or by a professor or by an officer, he is to complain thereof in writing to the president,

who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

No cadet will take food from the mess-hall without permission from the president.

Any cadet receiving 100 demerits for any term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

Physiology and Hygiene.

DOCTOR REDFEARN.

Junior Class, two hours a week. FIRST TERM—Martin's Human Body is used as a text-book. The work is supplemented by lectures on the subject under discussion, and by dissection and microscopic sections. Lectures on subjects of hygiene are given throughout the course.

Fitting School.

PROFESSOR MORRISON, TUTORS SHANKLIN,
LEE, AND KLUGH.

For the benefit of those not prepared to enter the College classes, a course of study is provided, in which there is careful drill in the elements of English, Mathematics, Geography, and History. The following is an outline of the work.

ENGLISH: Longman's Grammar; Longman's Composition; reading of "Seven American Classics," "Seven Brit-

ish Classics," and Kingley's Greek Heroes ; Whitney-Lockwood Grammar ; frequent written exercises.

MATHEMATICS : Wentworth's Grammar-School Arithmetic ; Wentworth's Elements of Algebra.

HISTORY AND GEOGRAPHY : Appleton's Standard Higher Geography (edition for the Virginias and the Carolinas) ; Eggleston's History of the United States and Its People.

Agricultural Course.

FRESHMAN.

	Hours per week.
Mathematics.....	5
English	5
History	3
Agriculture	2
	—
	15
Practical farm work	10
Military drill.....	2
Free hand drawing.....	3
	—
	15

SOPHOMORE.

Mathematics.....	5
English	2
Natural Philosophy.....	3
Chemistry.....	3
Agriculture.....	2
	—
	15
Chem. Laboratory.....	4
Drill.....	2
Practical Agriculture.....	9
	—
	15

JUNIOR.

English.....	2
History	2
Chemistry	2

Hours per week.

Agriculture	}	7
Entomology.....		
Botany		
Dairying		
Physiology		1
Mil. Science.....		1
		—
		15
Chem. Lab.....		8
Farm and Dairy.....		5
Drill.....		2
		—
		15

SENIOR.

English.....	2
History	2
Chemistry	2
Min. and Geol.....	3
Agriculture	3
Horticulture, Vet. Sci.....	2
Mil. Sci.....	1
	—
	15
Chem. Lab.....	8
Vet. Prac.....	5
Drill	2
	—
	15

COURSE IN ENGINEERING AND MECHANIC ARTS.

FRESHMAN.		Hours per week.	
	Hours per week.		
Mathematics.....	5	Mechanics.....	2
English.....	5	English.....	2
History.....	5	Military Science.....	1
	—		—
	15		15
Wood Work.....	4	Machine Shop.....	5
Mechanical Drawing.....	3	Mech. Drawing & Des'n'g.	2
Free Hand Drawing.....	2	Electric Laboratory.....	4
Forge Work.....	4	Or Civil Engin'g Work.	
Drill.....	2	Mechanical Laboratory...	3
	—	Drill.....	2
	15		—
			16
SOPHOMORE.		SENIOR.	
Mathematics.....	5	Mechanical Engineering.	5
English.....	2	Or Electrical Engin'g...	
Descriptive Geometry.....	2	Or Civil Engineering....	
Chemistry.....	3	Theory of Electricity.....	2
Natural Philosophy.....	3	Applied Mechanics.....	3
	—	History.....	2
	15	English.....	2
Wood Work.....	2	Military Science.....	1
Mechanical Drawing.....	3		—
Foundry Work.....	4		15
Chemical Laboratory.....	4	Shop Work.....	4
Drill.....	2	Mech. Drawing & Des'n'g.	2
	—	Electric Laboratory.....	4
	15	Or Civil Engineering...	
		Mechanical Laboratory...	3
JUNIOR.		Drill.....	2
Mathematics.....	5		—
Physics.....	2		15
Electricity.....	3		

TWO-YEARS-COURSE IN MECHANIC ARTS.

FRESHMAN CLASS.

FIRST TERM.		SECOND TERM.	
	Hours per week.		Hours per week.
Mathematics.....	5	Mathematics.....	5
English	5	English	5
	—		—
	10		10
Wood Work.....	6	Wood Work.....	6
Mechanical Drawing.....	4	Mechanical Drawing.....	4
Forge Work.....	6	Forge Work.....	6
Machine Shop	5	Machine Shop	5
Drill.....	3	Drill.....	3
	—		—
	24		24

SOPHOMORE CLASS.

FIRST TERM.		SECOND TERM.	
	Hours per week.		Hours per week.
Mathematics.....	5	Mathematics.....	5
Descriptive Geometry.....	2	Descriptive Geometry.....	2
Physics	3	Physics	3
Wood Work.....	2	Wood Work.....	2
Mechanical Drawing.....	4	Mechanical Drawing.....	4
Foundry.....	6	Foundry.....	6
Machine Shop	10	Machine Shop	10
Drill.....	3	Drill.....	3
	—		—
	30		30

Experiment Station.

E. B. CRAIGHEAD,	.....	Director.
WALTER J. QUICK,	.....	Vice-Dir. and Agriculturist.
M. B. HARDIN	.....	Chief Chemist.
J. F. C. DUPRE	.....	Horticulturist.
W. E. A. WYMAN	.....	Veterinarian.
J. W. HART	.....	Dairyman.
J. V. LEWIS	.....	Geologist.
R. N. BRACKETT	.....	Assistant Chemist.
F. S. SHIVER	.....	Assistant Chemist.
JOHN THOMPSON	.....	Assistant Chemist.
C. C. McDONNELL	.....	Assistant Chemist.
J. P. LEWIS	.....	Foreman of Farm.
JOHN N. HOOK,	Secretary.....	Clemson College, S. C.

Under the Act of Congress approved March 2, 1887, the South Carolina Experiment Station was organized in January, 1888, at Columbia, as a department of the University of South Carolina. It was removed to Fort Hill in 1890 and re-organized as a department of Clemson Agricultural College.

The principal lines of work heretofore have been the analysis and control of fertilizers, experiments with fertilizers, and with field and garden crops.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investigation being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom.

Aside from the direct information gained, the habits of systematic observation formed will, in after years, be of invaluable assistance to students in solving for themselves the problems of agriculture.

FARMERS' INSTITUTES.

During the year Farmers' Institutes have been held, under the management of the College, at different points in the State. The Agriculturist, Horticulturist, Chief Chemist, Dairyman, Veterinarian and President of the College have taken part in these Institutes. The purpose has been, through these Institutes, to bring practical information to the farmer and to give him the results of scientific investigation in the interest of agriculture.

The success thus far attained is most encouraging and leads to the hope that these Institutes may become a permanent feature in the work of the College.

Farmers wishing an Institute to be held in their county or community should write to the President of the College.

Buildings and Equipments.

The Principal Academic Building contains eighteen recitation rooms, a library, offices for the President and for the Secretary and Treasurer, and halls for the students' literary societies.

Adjoining the main building is a hall capable of seating eight hundred persons, used for religious services and as an assembly room.

The Cadet Barracks is a three-story brick building, containing one hundred and sixty rooms, and in addition to these rooms it has a mess-hall one hundred and thirty-four by forty-four feet in size. This building is heated by steam, lighted by electricity, and has an abundant supply of pure fresh water.

The Mess-Hall is well supplied with table cloths, napkins, silverware and china.

Adjacent to the mess-hall is the kitchen, fifty feet by thirty-seven feet, equipped with all the modern appliances for culinary purposes.

The rooms in the barracks are each furnished with single

width folding iron cots, mattresses, table, chairs, ward robes, buckets, pan, cup, and mirror.

The Hospital, located apart from the other college buildings, is of wood and was especially constructed for its purposes. It is connected with the water-works and with the electric light plant, and it has a thorough sewerage system. The hospital has a capacity of twenty beds and its facilities are fairly complete. The hospital staff, consisting of the matron and a nurse is amply sufficient to insure good and personal attention to each patient.

The Mechanical Building, the building which is devoted to work in engineering and mechanic arts, is a substantial brick structure of liberal dimensions, containing about 30,000 square feet of floor space devoted to the various purposes named below :

The wood-shop is equipped with two circular saws, three scroll saws, fourteen turning lathes, a band saw, planer, jointer, shaper, moulding machine, tenoning machine, mortising machine, grind stone, emery wheel, a dry-kiln, eighteen manual training benches with a set of tools for each ; also many other small tools and appliances. Power is furnished by two electric motors.

The machine shop contains nine engine lathes, two speed lathes, two drill presses, one planer, one shaper, one universal milling machine, one power hack-saw, one emery wheel, one grindstone, fifteen work benches with a set of tools for each ; also a good collection of gauges and other small tools and appliances. The machinery is driven by a first-class electric motor which was built by the students.

The forge-shop contains eighteen forges with a like number of anvils and sets of tools ; blast for the forges is furnished by a blower driven by an electric motor. In hot weather ventilation is provided by a large fan which draws the foul air at the top of the room and allows the fresh air to flow in through the doors and windows in a gentle, natural breeze.

The foundry contains an improved hot blast cupola which is arranged in a compact and convenient plant with its blower and electric motor which drives same. A good brass furnace has also been recently installed. The room is unusu-

ally well lighted and adapted to its purpose and the outfit of tools and appliances is excellent.

The lecture and drawing rooms are well adapted to their respective uses and have a good equipment of the appliances needed for instruction.

There are several store rooms and other such adjuncts as are found useful in the course of instruction.

In this building is located a modern power plant consisting of two 90 h. p. steam boilers, two pumps, one 85 h. p. Corlis engine, two dynamos, a first-class switch-board and most of the accessories needed in a good equipment. This plant provides heat for the mechanical building, chemical laboratory, and laundry, furnishes all the electric lights used on the campus and supplies power to the barn, the mess-hall, the drinking water pump, the laundry and the mechanical building. This power is transmitted electrically except in case of the laundry, where a steam pipe and engine are used.

The mechanical laboratory, which is located in this building has not yet had its equipment installed, but it is expected that all will be ready for classes early in the session of 1897.

The Electrical Laboratory is a single story brick building, containing a lecture room, dark room, and experimental laboratory room. It is designed especially for its purposes, no iron, tin, steel or other magnetic material being used its construction.

The lecture room has a counter 5 x 9 feet, with slate top, built up of solid masonry, on which the most delicate experiments can be performed without fear of jar or vibration. The equipment consists of a 28-inch Weinshurst influence machine, a complete set of Leyden jars, and other apparatus necessary to illustrate the principles of Static Electricity, models of dynamos and motors, induction coil, transformer, arc and incandescent lights, etc., etc.

The Laboratory has brackets of masonry built out from the walls and surmounted with slate tops, upon which to place instruments of precision; three brick piers, also with slate tops, 3 x 4 feet, are used for the same purpose.

It is equipped with many of the most modern instruments of precision—Kelvin four coil astatic galvanometer,

Ayrton and Perry volt-meter, four D'Arsonval dead heat galvanometers, large ring tangent galvanometer, three resistance sets (Elliott Bros., range .1 to 10,000 ohms,) two combination Wheatstone Bridge sets, Beckers Chemical balance, Cahart-Clark standard cells, micrometers, Vernier Caliper-Magnets, thermometers, etc., etc.

Large Tesla Coil capable of giving 6-inch spark, and complete "X" ray outfit, embracing Edison's fluoroscopes, Crooks' tubes, etc. Commutating devices, and apparatus illustrating rotary field, etc., etc.

Current for experimental purposes is obtained from cells of various makes, a battery of chloride accumulators, in the laboratory and from the mains that connect the laboratory with the power station. This station contains one thirty K. W. Weston Generator, one Lundell eighteen K. W. Generator, one small alternator, complete set of station measuring instruments. The power is derived from an 85 H. P. Corliss engine.

The students have access to this plant, and are thus enabled to see the practical workings of an electric light and power plant, as well as being able to test the efficiency of same, take characteristic curves of generators and motors in actual working operation. Weston measuring instruments are used for making these determinations. There are also nine motors, ranging from $\frac{1}{2}$ to 20 H. P., used at different points on the college property, and for a variety of purposes, enabling the students to become familiar with such machines under actual constant working conditions. Several of these motors are at a considerable distance, thus furnishing examples of electrical transmission of power.

Civil Engineering.—The College is equipped with a limited supply of excellent instruments for field work in engineering, consisting of transits, compasses and leveling outfits. This collection will be added to as occasion demands.

The Physical Laboratory is in the main college building and is fairly well equipped for making all experiments for illustrating the subjects taught.

The Chemical Laboratory is of brick, fifty by eighty feet, two stories high. It is roofed with slate and finished inside with Southern pine.

On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, and are supplied with all necessary chemical and optical apparatus. Of the other rooms on this floor, one is a balance room for students, one an office, and the third is fitted up as a laboratory for advanced students. The basement is used for assaying and for storage.

On the second floor there are five rooms. The qualitative laboratory, which is the largest of these, is thirty-six by forty-eight feet, with a pitch of seventeen feet in the clear. It will accommodate sixty students at a time, and is provided with hoods for carrying off noxious gases, convenient working tables, water, gas, and all necessary appliances for experimental work. The other rooms on this floor are the lecture room, professor's laboratory, an office, and a room for gas analysis.

Geology and Mineralogy.—Instruction in geology and mineralogy was inaugurated at the opening of the College in February, 1896; and hence only a beginning has been made in the way of collections. There are about eight hundred labelled specimens of typical rocks, minerals, and fossils in the teaching collections, besides smaller quantities of material for the laboratory study. The type collections are arranged in systematic order in glass cases, and are always available to students.

For classes in mineralogy, the laboratory is supplied with water and gas and complete apparatus and reagents for the determination of minerals by means of physical and chemical properties.

Standard works in geology and mineralogy are kept in the laboratory for reference. The College is also a stated repository for publications of the United States Geological Survey; and many valuable maps and reports have already been received from this source, including all geologic folios that have been issued, and a select series of topographic sheets for instruction in physical geography. A number of valuable maps are supplied by the United States Coast and Geodetic Survey.

Specimens Wanted.—The College is anxious to procure and place on exhibit specimens of all ores, minerals, and

other natural products of the State both for the instruction of our young men in the State's resources and possibilities, and for a permanent exhibit of these resources to all who may be interested in their development. There should be specimens here from every county in the State, and a great many from some of the counties; and the Professor of Geology will be glad to correspond with any one who may be willing to furnish such specimens. Instructions for collecting and packing specimens for shipment will be cheerfully furnished, and, when desired, information as to their nature and value will be given in all cases not involving assay or chemical analysis, as work of this nature belongs properly to the department of chemistry.

Veterinary Division.—The equipment of the Veterinary Division consists of a commodious operating house, with several stalls, in which the animals requiring care are kept. Connected with it is the veterinary pharmacy where all the standard preparations are found, or made for diseased animals. A blacksmith shop fully fitted for the shoeing of horses and mules is attached to that building, also a dissecting room for the study of comparative anatomy.

The Dairy Division has a building especially constructed for dairy purposes, is equipped with a twelve horse-power boiler, an eight horse-power engine, and apparatus necessary for butter and cheese-making by most approved methods.

The Horticultural Division is provided with a greenhouse, a canning house, and a packing house with brick basement.

Experiment Station Offices.—A wooden building containing offices, a library, and storage and seed rooms, is provided for the use of the officers of the Experiment Station.

Farm Buildings.—The college is provided with two barns. One, thirty-six feet by eighty feet, for the teams, wagons and the storage of forage. Of the other, one section, one hundred and eighty-four feet by thirty feet, accommodates eighty head of cattle; and the second, forty by seventy-two feet, contains six silos with an aggregate capacity of four hundred tons.

OTHER BUILDINGS.

The Hotel, a beautifully located building, overlooking the campus and college buildings, has been erected.

Nine two-story brick buildings, nine six-room cottages, and sixteen smaller houses furnish residences for professors, and other employees.

The Laundry is a brick building, specially constructed and fitted with the improved machinery of a modern steam laundry.

Calhoun Mansion.—The former residence of John C. Calhoun is kept, in accordance with the provisions of Mr. Clemson's will, as a place for preserving the relics of Calhoun, and for the fine collection of oil paintings left to the College by Mr. Clemson.

Water Supply.

There are two sources from which water is obtained. The general supply is collected through iron pipes into a reservoir, from which it is pumped into a water-tower eighty feet high, whence it is distributed.

Drinking water is pumped, in a continuous stream, from a bold spring directly into the barracks. It is by this means furnished fresh, pure, and cold.

The waste water is used for flushing the sewer-pipes, which empty into the Seneca river, a half-mile away.

Library.

In the main building are a series of rooms specially constructed for the use of the Library. About 2075 volumes of standard English literature, history, biography, general science, etc., and about 300 volumes of government publications are now on the shelves. The number of books is being added to each year; they have been recently classified and arranged, and excellent opportunity is now offered students for general and supplementary reading.

The chemical, mechanical, and agricultural departments have separate collections of scientific books. Contributions of books to the library are specially solicited. Books bearing upon the history of this State and now out of print are particularly desired.

The following donations have been made to the library :

“History of the South Carolina Military Academy,” by John P. Thomas ; presented by Hon. B. R. Tillman.

“Memoir of the Cotton Plant,” by Gov. Seabrook ; presented by his son.

“Missouri University Sermons ;” presented by Rev. S. S. Laws, L. L. D.

“Sketches by Gov. Perry of South Carolina” and “Reminiscences by B. F. Perry, Ex-Governor of South Carolina ;” presented by his family.

“American Coast Pilot” (once owned by J. C. Calhoun) ; presented by Thomas G. White.

“A History of the Calhoun Monument at Charleston, S. C. ;” presented by the ladies of the Calhoun Monument Association.

“A History of the McCormick Theological Seminary of the Presbyterian Church,” by Le Roy Halsey, D. D., LL. D. ; presented by the Author.

“College Addresses, etc.,” by Wm. J. Rivers ; presented by the Author.

“Life of General Thomas Pinckney,” by his grandson, Charles Cotesworth Pinckney ; presented by the Author.

“Life of Sitting Bull and the Indian War of 1890-'91” ; presented by Jno. S. Goodman.

Valuable books and pamphlets presented by Hon. B. R. Tillman.

Pamphlets and Government Reports presented by Hon. A. C. Latimer and by Hon J. L. M. Irby.

It is to be regretted that the fire destroyed the records of the library with many of the books, and that a full list of presentation copies and their donors cannot, therefore, be given.



View of

MAIN BUILDING AND BARRACKS.



READING ROOM.

The reading room, to which Cadets have access, receives regularly the following newspapers and periodicals :

The daily papers of the State ;
The Atlanta Constitution ;
The New York Times ;
Many county papers are on file ;
American Agriculturist ;
American Journal of Politics ;
Century ;
Cosmopolitan ;
Edinburgh Review ;
Educational Review ;
Evening Post (N. Y. Saturday edition) ;
Fortnightly Review ;
Forum ;
Good Roads ;
Harper's Monthly ;
Harper's Weekly ;
Illustrated American ;
Illustrated London News ;
Judge ;
Life ;
Magazine of American History ;
Munsey's Magazine ;
Nation ;
North American Review ;
Overland Monthly ;
Popular Science Monthly ;
Public Opinion ;
Puck ;
Review of Reviews ;
Scientific American and Supplement ;
Scribner's Magazine ;
Short Stories ;
Southern Cultivator ;
St. Nicholas ;
Youth's Companion.

General Statements.

All regular students are required to board in the institution except those who live with their parents near enough to attend from their homes.

The government is military, and each student is required to purchase the prescribed uniform.

Students may provide themselves with such work clothes as they desire.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow, and two pillow cases.

EXPENSES.

Board, Nine Months.....	\$54 00
Laundry Fee.....	5 00
Incidental Fee.....	2 00
Above payable quarterly in advance.	
Medical Fee, payable semi-annually in advance.....	5 00

UNIFORM.

Dress Coat.....	9 25
Blouse.....	5 75
Trousers.....	5 15
Cap and Pompon.....	1 63
	\$87 78

Send money orders, or N. Y. Exchange. Do not send local checks.

TERMS, VACATION, ETC.

The next annual session begins, Feb. 18, 1897, and closes Dec. 16, 1897. There will be a vacation extending from July 15, to August 15, dividing the session into the spring and fall terms.

REQUIREMENTS FOR ADMISSION.

Students under fifteen years of age are not to be admitted, except where two brothers apply, one being over fifteen, the other not under fourteen.

Thorough proficiency in Arithmetic, Elementary Algebra, English Grammar, Geography and History of the United States is required for admission into the Freshman Class. A preparatory course is provided for students not sufficiently advanced for the College classes. The text-books recommended to those preparing to enter the Freshman Class are Wentworth's Grammar-School Arithmetic, Wentworth's Elements of Algebra (used in the preparatory course), Whitney-Lockwood English Grammar, Appleton's Higher Geography, Eggleston's History of the United States and Its People.

It is of utmost importance that applicants be present on the day of the opening.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption, or any other contagious or communicable disease, or any permanent disability for manual labor or military duty. All cases of serious sickness are transferred immediately to the hospital for treatment, the parents of such cadets being notified by letter, and in event of sudden or alarming illness, by telegraph.

REPORTS.

Monthly reports to parents are furnished, giving the standing of students in all studies.

SPECIAL STUDENTS.

Young men who for satisfactory reasons are unable to complete the regular courses, may upon the approval of the faculty, pursue special studies, but no student will be permitted to remain at the college whose time is not fully occupied.

DEGREES.

Students who satisfactorily complete the four years' course in either department of the college will receive the degree of Bachelor of Science.

LITERARY SOCIETIES.

The students have organized three literary societies : the Calhoun, the Palmetto, the Columbian.

The training to be gained from the societies is valuable, and all students are encouraged to join one of them. Public celebrations, at which there are debates, orations, and declamations by the students, are held during the year.

PUBLIC ADDRESSES.

It is the purpose of the Trustees to have distinguished men address the students, from time to time, on practical and scientific subjects. The following gentleman have addressed the cadets in Memorial Hall :

Dr. J. W. Babcock, Sup't of the State Lunatic Asylum.

Rev. S. S. Laws, D. D., LL. D., Ex-President University of Mo.

Rev. Jno. C. Kilgo, D. D., President Trinity College, N. C.

Gen. Steven D. Lee, President Mississippi A. and M. College.

Capt. C. E. Vawter, President of the Miller School, Va.

Hon. Geo. D. Tillman.

Gov. John Gary Evans.

Bishop Chas. B. Galloway.

Pres't Geo. B. Cromer, Newberry College, S. C.

RELIGIOUS SERVICES.

During the past year there has been preaching in Memorial Hall on Sunday morning by ministers of the different denominations. All students attend these services. In addition to these a Sunday School, at which attendance is voluntary, meets every Sunday.

Chapel services are conducted every morning by the professors in turn.

The Young Men's Christian Association meets in Memorial Hall every Sunday evening and is well attended. Members of the Faculty frequently attend and, when requested, address the Association on fitting subjects. Six students, whose expenses were in part met by the Association, attended the Summer School at Knoxville, Tenn. Following are the

officers of the Association for the coming year : J. E. Davis, President ; R. L. Spencer, Vice-President ; P. W. Moore, Secretary ; W. H. Seigler, Treasurer.

CADET EXCHANGE.

A Cadet Exchange has been established where students may purchase at wholesale prices necessary articles, such as books, clothing, stationery, etc.

LOCATION.

The College is one mile from Calhoun, a station on the Southern Railway, four miles from Pendleton, on the C. & G. R. R., and two miles from Cherry's Crossing, a flag station on the C. & G. R. R.

Students from the lower part of the State are advised to buy their tickets and have their trunks checked to Cherry's Crossing. Wagons will meet the trains there on the day of the opening to transfer baggage to the College.

All applications for information should be addressed to President E. B. Craighead, Clemson College, S. C.

COMMENCEMENT, 1896.

SUNDAY, Dec. 13,

11 a. m., Commencement Sermon, Chancellor W. E. Boggs, D. D., University of Ga.

8 p. m., Annual Address before the Y. M. C. A., President E. B. Craighead.

MONDAY, Dec. 14,

Military Drill and Athletics.

8 p. m., Entertainment by College Glee Club.

TUESDAY, Dec. 15,

11 a. m., Annual Address before the Literary Societies
Dr. Wm. B. Smith, Tulane University.

WEDNESDAY, Dec. 16,

10 a. m., Graduating Orations and Delivery of Diplomas.

Roll of Students, 1895='96.

Lower Preparatory Class.

Name.	County.
ANDERSON, J. W.	Chester.
BABB, J. S.	Greenville.
BAILEY, B. G.	Kershaw.
BARWALD, H. A.	Atlanta, Ga.
BALENTINE, C. H.	Anderson.
BLAKENEY, J. R.	Lancaster.
BOAZMAN, J. B.	Newberry.
BOWERS, G. W.	Oconee.
BROOKBANKS, T. A.	Charleston.
BURN, W. H.	Chesterfield.
BUTLER, A. A.	Charleston.
CLAXTON, D. B.	Abbeville.
CLAXTON, W. C.	Abbeville.
CLINKSCALES, G.	Oconee.
COLEMAN, C. M.	Newberry.
COLEMAN, S. L.	Greenville.
COLEMAN, W. T.	Greenville.
CREECY, W. H.	Clarendon.
CULLER, F. M.	Orangeburg.
DAVIS, D.	Spartanburg.
DEAN, W. A.	Anderson.
DELOACHE, B. P.	Kershaw.
DOUGLASS, C. B.	Fairfield.
EPPS, D. M.	Williamsburg.
FORSYTHE, W. C.	Colleton.
GAHAGAN, B. S.	Colleton.
GANTT, M. W.	Spartanburg.
GRAHAM, R. C.	Charleston.
GRANT, G. B.	Colleton.
GRANT, W. M.	Darlington.
HARPER, S. D.	Anderson.
HIGHTOWER, A. F.	Greenville.
HOLLAND, J. I.	Anderson.
HUGHES, J. B.	Laurens.
HUGHES, S. G.	Greenville.
JACKSON, H. A.	Chesterfield.
JAUDON, H. A.	Charleston.
JEFFORDS, W. M.	Darlington.
JETER, T. C.	Union.
JERRY, J. C.	Laurens.
KAIGLER, J. C.	Lexington.

LARGE, J. D	Darlington.
LAWRENCE, J. HAMILTON.....	Pickens.
LAWRENCE, J. HENRY.....	Pickens.
LEE, C. F	Berkeley.
LEWIS, D. G.....	Ocone.
LEWIS, E. E	Pickens.
LIGHTSEY, H. W.	Hampton.
LOVE, J. M.	York.
MAHAFFEY, T. A.....	Greenville.
MARBERT, W. G.....	Abbeville.
MCCLURE, C. M.....	Anderson.
MCCUTCHEON, G. H.....	Sumter.
MCDILL, S. M.....	Chester.
McFADDEN, V. G.....	York.
MCGEE, C. W.....	Anderson.
McKEOWN, J. S.....	Chester.
MCKIE, H. W.....	Edgefield.
MELLARD, C. H.....	Colleton.
MITCHELL, E.....	Spartanburg.
NEWELL, N. J.....	Anderson.
ODOM, R.	Marlboro.
OUZTS, Y. W.....	Edgefield.
PINSON, J. S.....	Anderson.
POOLE, A. C	Spartanburg.
POSTELL, J. A.....	Colleton.
POU, J. R.....	Lexington.
REDFEARN, J. C.....	Chesterfield.
REID, E. G. R.....	Barnwell.
SANDERS, W. A.....	Chester.
SAULS, G. L	Williamsburg.
SMITH, P. W.....	Marion.
SPIRES, C. H.....	Orangeburg.
SPIRES, E. S.....	Orangeburg.
STALLINGS, G. E.	Aiken.
TAYLOR, A. E.....	Laurens.
TAYLOR, S. L.....	Abbeville.
TAYLOR, T. L.....	Abbeville.
THOMPSON, R. T.....	Orangeburg.
WADDILL, G. M.....	Marlboro.
WARD, H. H.....	Charleston.
WATSON, J. E	Anderson.
WELSH, W. B.....	Kershaw.
WILDER, B. F.....	Sumter.
YATES, J. C.....	Richland.
YATES, J. W.....	Richland.

Higher Preparatory Class.

Name.	County.
ADAMS, W. G.....	Darlington.
ARRINGTON, T. M.....	Edgefield.
BEAM, H. P.....	Greenville.
BEDENBAUGH, J. B.....	Newberry.
BOGGS, W. H.....	Oconee.
BOLICK, R. Y.....	Fairfield.
BOONE, M. H.....	Orangeburg.
BOWEN, J. H.....	Pickens.
BOWERS, D. C.....	Edgefield.
BRADFORD, R. D.....	Sumter.
BROWN, L. J.....	Sumter.
BRYANT, J. H.....	Colleton.
BURRISS, E. O.....	Anderson.
BURRISS, W. O.....	Anderson.
CAMPBELL, D. M.....	Colleton.
CANNON, R. S.....	Newberry.
CAUGHMAN, J. E.....	Edgefield.
CHANDLER, R. C.....	Florence.
CHREITZBERG, H. R.....	Charleston.
CLINKSCALES, W. H.....	Oconee.
CLYBURN, L. T.....	Kershaw.
CLYBURN, T. L.....	Lancaster.
CLYDE, W. L.....	Pickens.
COOPER, E.....	Richland.
CROSS, B. B.....	Chester.
DOUGLASS, H. A.....	Abbeville.
ERWIN, A.....	Anderson.
ETHEREDGE, J. F.....	Lexington.
EVERETT, J. L.....	Marlboro.
FAIREY, G. W.....	Orangeburg.
FAIREY, J. C.....	Orangeburg.
FUNCHESS, D. S.....	Orangeburg.
GEORGE, W. D.....	Lexington.
GLENN, W. B.....	Anderson.
GRAY, J. J.....	Hampton.
GREENE, J. G.....	Barnwell.
HAITHCOCK, D. M.....	Richland.
HAMILTON, E. L.....	Pickens.
HOUGH, I. C.....	Kershaw.
HOUGH, S. M.....	Kershaw.
JAMES, L. A.....	Sumter.
JEFFCOAT, C.....	Lexington.
JEFFCOAT, M.....	Lexington.
KELLER, I. L.....	Abbeville.
KINSLER, J. H.....	Richland.
LANGFORD, L. L.....	Fairfield.

LEGARE, C. G.	Charleston.
LEWIS, F. A.	Pickens.
LEWIS, G. I.	Horry.
LEWIS, G. P.	Oconee.
LITTLEJOHN, E. N.	Spartanburg.
LUNNEY, R. J.	Darlington.
MAPPUS, W. T.	Charleston.
MAULDIN, C. E.	Greenville.
MCCORD, E. M.	Abbeville.
MCDAVID, I. E.	Greenville.
MEARES, J. R.	Oconee.
MURPH, T. H.	Orangeburg.
NESMITH, M. D.	Williamsburg.
NESMITH, W. E.	Williamsburg.
NETTLES, E. W.	Sumter.
PALMER, J. J.	Berkeley.
PARKS, W. H.	Edgefield.
PARSON, A. B.	Laurens.
PARTLOW, B. P.	Edgefield.
PEARMAN, S. D.	Anderson.
RAMBO, J. H.	Edgefield.
ROBERTS, C. C.	Lexington.
SANDERS, J. W.	Anderson.
SARTOR, W. D.	Union.
SINGLETARY, E. M.	Williamsburg.
SITTON, J. M.	Anderson.
SLOAN, S. M.	Oconee.
SOJOURNER, N. W.	Barnwell.
STONE, J. A.	Edgefield.
THORNE, R. L.	Kershaw.
VAUGHT, E. A.	Marion.
WALKER, J. N.	Barnwell.
WATKINS, J. B.	Greenville.
WEBB, T. R.	Laurens.
WHEELER, W. H.	Sumter.
WHETSELL, J. D.	Orangeburg.
WHITE, J. D.	Sumter.
WOFFORD, T. O.	Spartanburg.
WOOD, M. E.	Greenville.
ZEIGLER, W. H.	Orangeburg.

Freshman Class.

Name.	County.
ADAMS, H.	Abbeville.
ADAMS, J. C.	Marlboro.
ARNHOLTER, W. B.	Georgetown.
AUSTIN, J. R.	Anderson.
AYERS, L. W.	Orangeburg.

BALENTINE, E. H	Anderson.
BLACKMAN, E. F	Lancaster.
BLACKWELL, W. G.....	Edgefield.
BOMAR, E. McL	Spartanburg.
BRIGGS, T. H.....	Edgefield.
BURNETT, R. A.....	Spartanburg.
CALHOUN, J. S.....	Barnwell.
CHEATHAM, J. C.....	Abbeville.
CHREITZBERG, C. K.....	Charleston.
CLAYTON, W. S.....	Barnwell.
CLINKSCALES, L. D.....	Oconee.
COLEMAN, R. W.....	Edgefield.
DAVIS, J. E.....	Clarendon.
ELDER, M. L.....	York.
EPPERSON, W. J.....	Sumter.
EPPS, H. G.....	Williamsburg.
FELDER, F. W.....	Orangeburg.
FLETCHER, B. A.....	Marlboro.
HAIR, A. B.....	Barnwell.
HOGG, W. T.....	Anderson.
HOOK, W. N.....	Orangeburg.
HOWZE, W. K.....	Union.
HUDSON, P. W.....	Greenville.
IRBY, W. C.....	Laurens.
JEFFARES, J. W.....	Fairfield.
JOHNSON, S. P.....	Laurens.
KEELS, I. A.....	Sumter.
KING, S. C.....	Darlington.
LEE, J. T.....	Abbeville.
LEWIS, J. E.....	Oconee.
LILES, S. E.....	Marlboro.
LINDER, W. L.....	Union.
MARTIN, C. B.....	Spartanburg.
MARTIN, H. C.....	Anderson.
MARTIN, L. J.....	Richland.
MATHIS, A. J.....	Barnwell.
MATHIS, W. G.....	Barnwell.
MAULDIN, J. M.....	Greenville.
MAULDIN, P. O.....	Greenville.
MCCASKILL, D. M.....	Kershaw.
MCCLURE, J. F.....	Anderson.
MCDavid, A. W.....	Greenville.
MCGOUGAN, D. F.....	Horry.
McLENDON, R.....	Darlington.
MEDLOCK, J. A.....	Edgefield.
MEARES, W. P.....	Oconee.
MIDDLETON, R. H.....	Edgefield.
MITCHELL, J. H.....	Spartanburg.

MORRISON, J. B.....	Berkeley.
NORRIS, A. P.....	Greenville.
PARKS, J. A.....	Spartanburg.
PIPKIN, H. O.....	Williamsburg.
PRATT, J. H.....	Abbeville.
RICE, C. L.....	Colleton.
RICHEY, H. A.....	Pickens.
ROGERS, W. Z.....	Marlboro.
SANDERS, J. O.....	Anderson.
SEIGLER, C. H.....	Aiken.
SHEALEY, A. S.....	Edgefield.
SHUMATE, W. W.....	Greenville.
SIFLY, J. M.....	Florence.
SIMPSON, T. S.....	Anderson.
SINGLETARY, L. S.....	Williamsburg.
SMITH, A. M.....	Newberry.
SMITH, H. G.....	Oconee.
SMITH, M. B.....	Abbeville.
SMITH, W. R.....	Newberry.
SNIDER, H. J.....	Orangeburg.
SONNTAG, C. G.....	Barnwell.
STACY, A.....	Spartanburg.
STACY, R.....	Spartanburg.
STRIBLING, J. C.....	Anderson.
STRIBLING, J. H.....	Anderson.
STUCKY, J. W.....	Darlington.
SWETT, W. N.....	Marlboro.
TATUM, T. H.....	Orangeburg.
TAYLOR, I. B.....	Abbeville.
THOMSON, J. C.....	Washington, D. C.
TALBERT, G. R.....	Abbeville.
TURNER, T. H.....	Barnwell.
WALKER, W. F.....	Barnwell.
WELLS, C. H.....	Orangeburg.
WELSH, B. M.....	Lancaster.
WISE, R. M.....	Barnwell.
YOUNG, J. L.....	Laurens.

Sophomore Class, Mechanical Section.

Name.	County.
BROCK, W. T.....	Chesterfield.
CALDWELL, A. P.....	Spartanburg.
COLSON, G. E.....	Charleston.
DREHER, L. S.....	Lexington.
DUPRE, E. M.....	Richland.
ELLERBE, W. T.....	Horry.
ES'DORN, C. H.....	Charleston.

FOSTER, A. F.....	Newberry.
GENTRY, C. W.....	Spartanburg.
GLENN, W. H.....	Richland.
HANVEY, J. T.....	Abbeville.
HOFFMEYER, H. F. L.....	Florence.
HOOKE, J. H.....	Orangeburg.
JONES, F. N.....	Colleton.
MAHAFFEY, C. B.....	Anderson.
MAULDIN, C. M.....	Greenville.
MAXWELL, J. D.....	Anderson.
MCCRARY, J. A.....	Anderson.
MCCOMB, R. S.....	Abbeville.
MOORE, M. D.....	Greenville.
QUARLES, J. P.....	Abbeville.
ROGERS, D. F.....	Marion.
SMITH, A. P.....	Chester.
SWYGERT, G. H.....	Lexington.
TALBERT, A. D.....	Edgefield.
TAYLOR, J. E.....	Charleston.
VOGEL, T. R.....	Barnwell.
WALKER, T. J.....	Barnwell.
WELLS, M. M.....	Abbeville.
WISE, J. T.....	Barnwell.
WOODSIDE, R. I.....	Greenville.
WRIGHT, W. P.....	Laurens.

Sophomore Class, Agricultural Section.

Name.	County.
BLAIN, W. A.....	Fairfield.
BREAZEALE, B. B.....	Anderson.
BROWNE, D. O.....	Anderson.
BRYAN, A. B.....	Barnwell.
COLLINS, R. W.....	Spartanburg.
FARLEY, W. C.....	Spartanburg.
GARRIS, J. S.....	Colleton.
GRUBBS, M. W.....	Anderson.
HALLUM, R. T.....	Pickens.
HANKINSON, L. H.....	Aiken.
HANVEY, G. A.....	Abbeville.
HENDERSON, W. E.....	Abbeville.
HENRY, D. H.....	Abbeville.
KENYON, W. A.....	Charleston.
McFADDEN, W. H.....	Chester.
MILLAR, C. B.....	Charleston.
MINUS, J. P.....	Colleton.
MOORE, P. W.....	Greenville.
PARKS, W. P.....	Edgefield.

ROBERTS, J. H.....	Lexington.
SARRATT, W. J.....	Spartanburg.
SCURRY, J. B.....	Newberry.
SMITH, J. B.....	Barnwell.
SMITH, L. J.....	Anderson.
SPENCER, R. L.....	York.
SPROTT, J.....	Clarendon.
STUBBS, C. H.....	Sumter.
WEST, J. D.....	Horry.
WESTCOTT, W. R.....	Orangeburg.
WIGGINS, G.....	Berkeley.

Junior Class, Mechanical Section.

Name.	County.
AULL, B. M.....	Newberry.
BOWEN, J. T.....	Pickens.
BRADLEY, J. T.....	Abbeville.
BRYANT, F. L.....	Spartanburg.
CALHOUN, P. N.....	Oconee.
CARPENTER, W. H.....	Anderson.
CHREITZBERG, A. M.....	Charleston.
COTHRAN, T. W.....	Abbeville.
DOWLING, D.....	Barnwell.
EARLE, E. P.....	Oconee.
HART, G. W.....	Orangeburg.
HUNTER, J. E.....	Newberry.
KLUGH, W. W.....	Abbeville.
LANGLEY, P. G.....	Charleston.
LEE, R. E.....	Abbeville.
MAULDIN, I. M.....	Pickens.
PEGUES, O. M.....	Marlboro.
RAWL, H. J.....	Lexington.
SEASE, L. A.....	Lexington.
SIMPSON, J. G.....	Anderson.
TINDAL, A. J.....	Clarendon.
TUTEN, T. H.....	Hampton.
WARDLAW, W. W.....	Abbeville.
WELCH, R. H.....	Newberry.

Junior Class, Agricultural Section.

Name.	County.
BLAIN, J. M.....	Fairfield.
BROWN, E. P.....	Spartanburg.
BOULWARE, G. P.....	Newberry.
BREAZEALE, J. F.....	Anderson.
EVERETT, E. H.....	Marlboro.
FELDER, W. L.....	Orangeburg.

FOLK, J. F.	Colleton.
FURMAN, C. M.	Oconee.
GOODING, P. H.	Hampton.
HAMILTON, R. G.	Union.
MOORE, J. H.	Abbeville.
MOORMAN, T. S.	Richland.
ROBERTSON, B. F.	Pickens.
SIFLY, M. L.	Florence.
SLOAN, B. F.	Oconee.
SMITH, D. L.	Charleston.
SNIDER, C. H.	Orangeburg.
TILLMAN, B. R., Jr	Edgefield.
TOMPKINS, F. G.	Richland.
TURNIPSEED, B. R.	Richland.
WERTS, L. A.	Edgefield.
WIGGINS, J. B.	Berkeley.
YELDELL, G. S.	Edgefield.

SUMMARY OF STUDENTS.

BY CLASSES.

Junior Class—Mechanical Section	24
Junior Class—Agricultural Section	23
Sophomore Class—Mechanical Section	32
Sophomore Class—Agricultural Section	30
Freshman Class	90
Higher Preparatory Class	86
Lower Preparatory	85
Total	370

Summary of Students by Counties.

Abbeville	28
Aiken	3
Anderson	35
Barnwell	19
Berkeley	5
Charleston	17
Chester	7
Chesterfield	4
Clarendon	4
Colleton	12

Darlington	8
Edgefield.....	20
Fairfield	6
Florence	4
Greenville.....	22
Hampton.....	4
Horry	4
Kershaw	8
Lancaster.....	4
Laurens.....	9
Lexington.....	12
Marion.....	3
Marlboro	10
Newberry.....	12
Oconee.....	16
Orangeburg	22
Pickens	12
Richland.....	11
Spartanburg	19
Sumter.....	11
Union	5
Williamsburg	8
York	4
Total.....	370

Roll of Students, 1896.

FITTING SCHOOL.

Lower Preparatory Class.

Name.	County and State.
BARKER, F. H.	Pickens, S. C.
BODIE, F. E.	Saluda, S. C.
BENEY, A. C.	York, S. C.
BRODIE, M. A.	Charleston, S. C.
CARTER, A. H. J.	Charleston, S. C.
CAVE, L. G.	Barnwell, S. C.
CHAPMAN, W. E.	Greenville, S. C.
CLAXTON, W. C.	Abbeville, S. C.
CLEMENT, J. R.	Spartanburg, S. C.
COLEMAM, W. W.	Florence, S. C.
COPELAND, F. B.	Florence, S. C.
CRAWFORD, F.	Pickens, S. C.
CRAWFORD, R. C.	Pickens, S. C.
CRESSWELL, W. H.	Spartanburg, S. C.
DAVIS, J. P.	Edgefield, S. C.
DAVIS, L. M.	Sumter, S. C.
FAIREY, R. L.	Orangeburg, S. C.
FELLERS, G. K.	Abbeville, S. C.
FINGER, E. R.	Spartanburg, S. C.
GIBBONS, H. E.	Steuben, N. Y.
GOODMAN, J. C.	Oconee, S. C.
GOODMAN, W. P.	Oconee, S. C.
GRAHAM, R. C.	Charleston, S. C.
HALL, E. A.	Charleston, S. C.
HARDIN, J. D.	York, S. C.
HARRELL, E. D.	Darlington, S. C.
HAYS, A. F.	Charleston, S. C.
HENDRICKS, L. L.	Pickens, S. C.
HESSE, C. H.	Charleston, S. C.
HUGUENIN, C. C.	Charleston, S. C.
HUMBERT, D. G.	Pickens, S. C.
JACKSON, H. A.	Chesterfield, S. C.
JENNINGS, D.	Charleston, S. C.
JERRY, A. H.	Laurens, S. C.
JERRY, J. C.	Laurens, S. C.
JOHNSON, E. E.	Spartanburg, S. C.
KELLY, W. C.	Darlington, S. C.
KILLINGSWORTH, M. A.	Barnwell, S. C.



MECHANICAL HALL.

LABOON, W. H.	Anderson, S. C.
LEWIS, D. S.	Oconee, S. C.
MAJOR, J. A.	Anderson, S. C.
MANGUM, P. R.	Marlboro, S. C.
MARTIN, D. C.	Beaufort, S. C.
*MARTIN, W. H.	Orangeburg, S. C.
MCCARREL, H.	Charleston, S. C.
MITCHELL, J. B.	Spartanburg, S. C.
MOORE, T. B.	Spartanburg, S. C.
PAYNE, A. M.	Greenville, S. C.
PEGUES, E. S.	Marlboro, S. C.
PEPPER, W. H.	Anderson, S. C.
PICKENS, R. M.	Anderson, S. C.
POSTELL, S. E.	Berkeley, S. C.
ROGERS, W. L.	Anderson, S. C.
SANDERS, H. M.	Newberry, S. C.
SIRES, E. M.	Aiken, S. C.
SITTON, W. D.	Anderson, S. C.
SMITH, N. C.	Colquitt, Ga.
SPANN, W. H.	Lexington, S. C.
SPEED, W. H.	Abbeville, S. C.
SPIRES, J. A.	Orangeburg, S. C.
STOCKMAN, J. H.	Abbeville, S. C.
STONE, C. B.	Edgefield, S. C.
SULLIVAN, D. A. J.	Charleston, S. C.
TEAGUE, E. F.	Laurens, S. C.
TRAXLER, D. B.	Darlington, S. C.
TUCKER, M. W.	Abbeville, S. C.
WILLIAMS, J. L.	Edgefield, S. C.

*Died March 13, 1896.

Higher Preparatory Class.

Name.	County and State.
ADAMS, J. J.	Laurens, S. C.
ANDERSON, E. T.	Pickens, S. C.
ANDERSON, J. W.	Chester, S. C.
BARWALD, H. A.	Fulton, Ga.
BELLINGER, E. W.	Barnwell, S. C.
BLAKENEY, J. R.	Lancaster, S. C.
BLEASE, J. W.	Saluda, S. C.
BOUZARD, H. F.	Orangeburg, S. C.
BOYKIN, L.	Kershaw, S. C.
BROOKBANKS, T. A.	Charleston, S. C.
BROWN, J. H.	Oconee, S. C.
BURN, W. H.	Chesterfield, S. C.
BUTLER, A. A.	Charleston, S. C.
CAINE, W. P.	Laurens, S. C.

CAMPBELL, D. M.	Colleton, S. C.
CLINKSCALES, G. B.	Oconee, S. C.
CONOLLY, A. B.	Edgefield, S. C.
COOPER, D. B.	Williamsburg, S. C.
COX, F. D.	Anderson, S. C.
CULLER, F. M.	Orangeburg, S. C.
DAVIS, J. E.	Kershaw, S. C.
DE LOACH, B. P.	Kershaw, S. C.
DEVLIN, O. E.	Abbeville, S. C.
DOUGLASS, C. B.	Fairfield, S. C.
DUCKWORTH, J. C.	Anderson, S. C.
FINKLEA, J. O.	Florence, S. C.
FORSYTHE, R. G.	Transylvania, N. C.
FORSYTHE, W. C.	Transylvania, N. C.
GLOVER, H. P.	Greenville, S. C.
GRANT, A. B.	Colleton, S. C.
GUNBY, J. W.	Orangeburg, S. C.
HARD, C. F.	Charleston, S. C.
HARDIN, D. E.	Chester, S. C.
HARLING, J. F.	Edgefield, S. C.
HENDERSON, L. D.	Laurens, S. C.
HENDRICKS, J. M.	Pickens, S. C.
HICKS, J. C.	Oconee, S. C.
HOLLAND, J. I.	Anderson, S. C.
HUFFMAN, J. H.	Richland, S. C.
HUGHES, E. T.	Orangeburg, S. C.
HUGUENIN, U.	Charleston, S. C.
HUNT, W. L.	Pickens, S. C.
JEFFORDS, W. M.	Darlington, S. C.
JENKINSON, W. R.	Clarendon, S. C.
JOHNSON, G. L.	Spartanburg, S. C.
KAIGLER, J. G.	Lexington, S. C.
KING, L. L.	Charleston, S. C.
LAWRENCE, J. HAMILTON.	Pickens, S. C.
LAWRENCE, J. HENRY	Pickens, S. C.
LAWTON, T. O.	Hampton, S. C.
LAWTON, W. J.	Hampton, S. C.
LEWIS, D. G.	Oconee, S. C.
LIGHTSEY, H. W.	Hampton, S. C.
MATHIS, H. M.	Barnwell, S. C.
MCCALL, H. B.	Florence, S. C.
MCCALLA, M. P.	Abbeville, S. C.
MCCLURE, C. M.	Anderson, S. C.
MCCRARY, T. R.	Anderson, S. C.
McFADDEN, V. G.	York, S. C.
McFALL, H. T.	Anderson, S. C.
MCGEE, C. W.	Anderson, S. C.
McKIE, H. W.	Edgefield, S. C.

MCKINLEY, F. J.....	Charleston, S. C.
McMAKIN, J. W.....	Spartanburg, S. C.
MIKELL, T.....	Charleston, S. C.
MITCHELL, J. E.....	Spartanburg, S. C.
MOISE, W. L.....	Sumter, S. C.
MOORE, J. T.....	Marlboro, S. C.
NAPIER, R. L.....	Marlboro, S. C.
NEWELL, N. J.....	Anderson, S. C.
NEWELL, W. H.....	Anderson, S. C.
OWINGS, C. B.....	Laurens, S. C.
PATTERSON, R. S.....	Fairfield, S. C.
PEAKE, T. J.....	Laurens, S. C.
PEDEN, C. L.....	Laurens, S. C.
PICKETT, E. H.....	Oconee, S. C.
PONDER, F. B.....	Pickens, S. C.
POSTELL, J. A.....	Colleton, S. C.
POU, J. R.....	Lexington, S. C.
RAMSEY, H. L.....	Spartanburg, S. C.
REDFEARN, J. C.....	Chesterfield, S. C.
REEVES, R. N.....	Fairfield, S. C.
RILEY, D. L.....	Saluda, S. C.
SANDERS, W. A.....	Chester, S. C.
SAULS, E. C.....	Colleton, S. C.
SHAW, T. C.....	Anderson, S. C.
SITTON, J. M.....	Anderson, S. C.
SMITH, A. W.....	Hampton, S. C.
SMITH, P. W.....	Marion, S. C.
SPIRES, C. H.....	Orangeburg, S. C.
SPIRES, E. S.....	Orangeburg, S. C.
SPROTT, C. N.....	Clarendon, S. C.
STALLINGS, G. E.....	Aiken, S. C.
STUCKEY, J. D.....	Darlington, S. C.
TAYLOR, A. E.....	Abbeville, S. C.
TAYLOR, T. L.....	Abbeville, S. C.
THOMPSON, J. W.....	Kershaw, S. C.
WALKER, N. D.....	Union, S. C.
WALLACE, J. P.....	Marlboro, S. C.
WARD, H. H.....	Charleston, S. C.
WILKINSON, S. F.....	Abbeville, S. C.
WISE, E. M.....	Florence, S. C.

Freshman Class.

Name.	County and State.
ADAMS, W. G.....	Darlington, S. C.
ALL, J. E.....	Barnwell, S. C.
ARRINGTON, T. M.....	Edgefield, S. C.
BOOZER, R. A.....	Saluda, S. C.

BOOZER, S. L.	Saluda, S. C.
BOWEN, J. H.	Pickens, S. C.
BRADFORD, R. D.	Sumter, S. C.
CANNON, R. S.	Newberry, S. C.
CAUGHMAN, J. E.	Saluda, S. C.
CHAPMAN, J. H.	Greenville, S. C.
COHEN, M. E.	Sumter, S. C.
COOPER, E.	Richland, S. C.
COOPER, W. P.	Williamsburg, S. C.
DONALDSON, J. R.	Marlboro, S. C.
EPPS, H. G.	Williamsburg, S. C.
ERWIN, A.	Anderson, S. C.
ETHEREDGE, J. F.	Lexington, S. C.
EVERETT, J. L.	Marlboro, S. C.
FAIRY, E. C.	Orangeburg, S. C.
FOSTER, J. B.	Union, S. C.
GEORGE, W. D.	Lexington, S. C.
GLENN, W. B.	Anderson, S. C.
GOFF, A. T.	Saluda, S. C.
GRAY, H. K.	Greenville, S. C.
GRAY, J. J.	Barnwell, S. C.
HAIR, J. K.	Barnwell, S. C.
HOUGH, I. C.	Kershaw, S. C.
HOUGH, S. M.	Kershaw, S. C.
JEFFCOAT, C.	Lexington, S. C.
JEFFCOAT, M.	Lexington, S. C.
KENNEDY, J. L.	Laurens, S. C.
KING, S. C.	Darlington, S. C.
KINSLER, J. H.	Richland, S. C.
LANGFORD, L. L.	Fairfield, S. C.
LAWTON, F. A., JR.	Hampton, S. C.
LEGARE, C. G.	Charleston, S. C.
LEWIS, G. P.	Oconee, S. C.
LONG, W. H.	Fairfield, S. C.
MANNING, M.	Marion, S. C.
MAULDIN, C. E.	Greenville, S. C.
MAULDIN, J. M.	Greenville, S. C.
MAULDIN, L. O.	Pickens, S. C.
MCCORD, E. M.	Abbeville, S. C.
MCDavid, I. E.	Greenville, S. C.
McLAURIN, C. S.	Marlboro, S. C.
MEARES, J. R.	Pickens, S. C.
PARKS, W. H.	Edgefield, S. C.
PARKS, W. P.	Edgefield, S. C.
PEARMAN, S. D.	Anderson, S. C.
RAMBO, J. H.	Edgefield, S. C.
RAWL, B. H.	Lexington, S. C.
ROBERTS, C. C.	Lexington, S. C.

SANDERS, J. W.....	Anderson, S. C.
SLOAN, S. M.....	Oconee, S. C.
SOJOURNER, N. W.....	Aiken, S. C.
STONE, J. A.....	Edgefield, S. C.
SULLIVAN, J. F.....	Charleston, S. C.
WALKER, J. N.....	Barnwell, S. C.
WATKINS, J. B.....	Greenville, S. C.
WEBB, T. R.....	Laurens, S. C.
WELLS, C. H.....	Orangeburg, S. C.
WHITE, J. D.....	Sumter, S. C.
WOOD, M. E.....	Greenville, S. C.
ZEIGLER, W. H.....	Orangeburg, S. C.

Sophomore Class, Mechanical.

Name.	County and State.
CALHOUN, J. S.....	Barnwell, S. C.
CHREITZBERG, C. K.....	Charleston, S. C.
CLAYTON, W. S.....	Barnwell, S. C.
CLINKSCALES, L. D.....	Oconee, S. C.
ELDER, M. L.....	York, S. C.
FLETCHER, B. A.....	Marlboro, S. C.
HOOK, W. N.....	Orangeburg, S. C.
JEFFARES, J. W.....	Fairfield, S. C.
LEE, J. T.....	Abbeville, S. C.
LEWIS, J. E.....	Oconee, S. C.
MATHIS, A. J.....	Barnwell, S. C.
MEARES, W. P.....	Pickens, S. C.
PARKS, J. A.....	Spartanburg, S. C.
SEIGLER, C. H.....	Aiken, S. C.
SIMPSON, T. S.....	Anderson, S. C.
STRIBLING, J. C.....	Pickens, S. C.
STRIBLING, J. H.....	Pickens, S. C.
TATUM, T. H.....	Orangeburg, S. C.
TURNER, T. H.....	Barnwell, S. C.
TURNIPSEED, L. A.....	Richland, S. C.

Sophomore Class, Agricultural.

Name.	County.
ADAMS, H.....	Abbeville.
ADAMS, J. C.....	Marlboro.
AUSTIN, J. R.....	Anderson.
AYERS, L. W.....	Orangeburg.
BURNETT, R. A.....	Spartanburg.
CHEATHAM, J. C.....	Abbeville.
HOWZE, W. K.....	Union.
IRBY, W. C.....	Laurens.
LILES, S. E.....	Marlboro.

LINDER, W. L.....	Union.
McLENDON, R.....	Darlington.
NORRIS, A. P.....	Greenville.
PIPKIN, H. O.....	Williamsburg.
PRATT, J. H.....	Abbeville.
SANDERS, J. O.....	Anderson.
SHEALY, A. S.....	Saluda.
SMITH, A. M.....	Newberry.
SMITH, H. G.....	Oconee.
SMITH, W. R.....	Newberry.
SNIDER, H. J.....	Orangeburg.
STACY, A.....	Spartanburg.
TAYLOR, I. B.....	Abbeville.
THOMPSON, J. C.....	Washington, D. C.
WALKER, W. F.....	Barnwell.

Junior Class, Mechanical.

Name.	County.
BROCK, W. T.....	Chesterfield.
HANVEY, J. T.....	Abbeville.
HOOK, J. H.....	Orangeburg.
MAHAFFEY, C. B.....	Anderson.
MAXWELL, J. B.....	Anderson.
MAULDIN, C. M.....	Greenville.
MCCRARY, J. G.....	Anderson.
ROGERS, D. F.....	Marion.
SWYGERT, G. H.....	Lexington.
SMITH, A. P.....	Chester.
TALBERT, A. D.....	Edgefield.
VOGEL, T. R.....	Barnwell.
WALKER, T. J.....	Barnwell.
WISE, J. T.....	Aiken.
WRIGHT, W. P.....	Laurens.

Junior Class, Agricultural.

Name.	County.
BREAZEALE, B. B.....	Anderson.
BROWNE, D. O.....	Anderson.
BRYAN, A. B.....	Barnwell.
GARVIS, J. S.....	Colleton.
HALLUM, R. T.....	Pickens.
HANVEY, G. A.....	Abbeville.
HENRY, D. H.....	Abbeville.
McFADDEN, W. H.....	Chester.
MINNS, J. P.....	Colleton.
MOORE, P. W.....	Greenville.
SARRATT, W. J.....	Spartanburg.

SMITH, J. B.	Barnwell.
SPENCER, R. L.	York.
SPROTT, J.	Clarendon.
WIGGINS, G.	Berkeley.

Senior Class, Agricultural.

Name.	Name.
BLAIN, J. M.	MOORMAN, T. S.
BOULWARE, G. P.	ROBERTSON, B. F.
BREAZEALE, J. F.	SLOAN, B. F.
FOLK, J. F.	TILLMAN, B. R.
FURMAN, C. M.	TOMPKINS, F. G.
GOODING, P. H.	TURNIPSEED, B. R.
HAMILTON, R. G.	WERTS, L. A.
MOORE, J. H.	

Mechanical.

Name.	Name.
AULL, B. M.	HUNTER, J. E.
BOWEN, J. T.	KLUGH, W. W.
BRADLEY, J. T.	LANGLEY, P. G.
BRYANT, F. L.	LEE, R. E.
CALHOUN, P. N.	MAULDIN, I. M.
CARPENTER, W. H.	PEQUES, O. M.
CHREITZBERG, A. M.	SEASE, L. A.
COTHRAN, T. W.	SIMPSON, J. G.
DOWLING, D.	TINDAL, A. J.
EARLE, E. P.	TUTEN, T. H.
HART, G. W.	WARDLAW, W. W.

SUMMARY OF STUDENTS.

By Classes.

Seniors—Mechanical.....	22
Seniors—Agricultural.....	15
Juniors—Mechanical.....	15
Juniors—Agricultural.....	15
Sophomore—Mechanical.....	20
Sophomore—Agricultural.....	24
Freshman.....	63
Fitting School.....	169

By Counties.

Abbeville.....	25
Aiken.....	5
Anderson.....	32
Barnwell.....	18
Berkeley.....	2
Beaufort.....	1
Charleston.....	23
Chester.....	5
Chesterfield.....	4
Clarendon.....	4
Colleton.....	7
Darlington.....	9
Edgefield.....	15
Fairfield.....	7
Florence.....	5
Greenville.....	13
Hampton.....	7
Kershaw.....	6
Lancaster.....	1
Laurens.....	13
Lexington.....	11
Marion.....	3
Marlboro.....	12
Newberry.....	7
Oconee.....	16
Orangeburg.....	18
Pickens.....	21
Richland.....	6
Saluda.....	8
Spartanburg.....	16
Sumter.....	5

Union.....	5
Williamsburg	4
York.....	5

Total..... 339

Washington, D. C.....	1
Transylvania, N. C.....	2
Fulton, Ga.....	1
Steuben, N. Y.....	1
Colquitt, Ga.....	1

345

Special Students.

Johnson, B. F., (M. A. Central College).....	Fayette, Mo.
Ferrata, E.....	Rome, Italy.
McGraw, J. A.....	Newberry, S. C.
Lee, J. T.....	Spartanburg, S. C.
Gentry, C. W.....	Spartanburg, S. C.

5

Total number students..... 350

ROSTER OF THE OFFICERS AND NON-COMMISSIONED OFFICERS OF THE CLEMSON COLLEGE CORPS OF CADETS.

COMMANDMENT OF CADETS.

CAPTAIN EZRA B. FULLER, Seventh United States Cavalry.

FIRST BATTALION.

SECOND BATTALION.

Companies "A," "B" and "C." Companies "D," "E" and "F."

MAJOR E. M. BLYTHE.

MAJOR G. SHANKLIN.

COMMISSIONED STAFF.

Cadet Lieutenant and Adjutant.....T. W. COTHRAN.

Cadet Lieutenant and Quartermaster W. W. WARDLAW.

NON-COMMISSIONED STAFF.

Cadet Sergeant Major.....P. H. GOODING.

Cadet Quartermaster Sergeant.....J. F. FOLK.

Cadet Color Sergeant.....J. E. HUNTER.

Cadet Drum Major.....J. T. BOWEN.

Cadet Sergeant of the Band.....J. F. BREAZEALE.

RANK.	"A" Company.	"B" Company.	"C" Company.	"D" Company.	"E" Company.	"F" Company.
Captain	R. E. Lee.	O. M. Pegues.	W. W. Klugh, Jr.	I. M. Mauldin.	W. H. Carpenter.	F. G. Tompkins.
Lieutenants	J. G. Simpson	C. M. Furman, Jr.	B. R. Tillman, Jr.	E. P. Earle, Jr.	T. H. Tuten.	L. A. Sease.
	T. S. Moorman	A. M. Chreitzberg, Jr.	J. H. Moore	B. F. Robertson.	R. G. Hamilton	P. G. Langley
First Sergeants.	J. T. Bradley	G. W. Hart	G. W. Boulware.	F. L. Bryant	B. M. Aull	A. J. Tindal.
	T. R. Vogel	G. H. Swygert	W. T. Brock	P. W. Moore	J. H. Hook	R. T. Hallum.
Sergeants	J. S. Garis.	D. O. Browne	G. A. Hanvey	J. B. Smith.	D. H. Henry.	D. F. Rogers.
	J. Sprott	A. D. Talbert.	J. T. Hanvey.	J. T. Wise.	J. A. McCreary.	J. P. Minus
	Vacancy	W. H. McFadden.	T. J. Walker	R. L. Spencer	W. J. Sarratt.	G. Wiggins
Corporals.	J. A. Parks.	J. C. Cheatham.	H. J. Snider	J. H. Pratt.	I. B. Taylor.	C. K. Chreitzberg.
	C. H. Seigler	T. H. Tatum	W. N. Hook	W. C. Irby	T. H. Turner.	R. McLendon.
	T. S. Simpson	J. C. Thompson	L. A. Turnipseed.	M. L. Elder	L. W. Ayers.	A. S. Shealy.

EXTRACT FROM THE WILL OF
Thomas G. Clemson,
Relating to the College.

STATE OF SOUTH CAROLINA,

COUNTY OF OCONEE.

Whereas I, Thos. G. Clemson, of the County and State aforesaid, did on the 14th of August, 1883, execute my last will and testament, wherein I sought to provide for the establishment of a scientific institution upon the Fort Hill place, and therein provided what sciences should be taught in said institution; and whereas I am now satisfied that my intention and purpose therein may be misunderstood as intending that no other studies or sciences should be taught in said institution than those mentioned in said will, which was not my purpose or intention: Now, desiring to make my purpose plain, as well as to make some other changes in the disposition of my property than made in said will, I do now make, publish and declare this instrument as and for my last will and testament, hereby revoking all previous wills and codicils by me made, especially the will above referred to, dated August 14th 1883. Feeling a great sympathy for the farmers of this State, and the difficulties with which they have had to contend in their efforts to establish the business of agriculture upon a proper basis, and believing there can be no permanent improvement in agriculture without a knowledge of those sciences which pertain particularly thereto, I have determined to devote the bulk of my property to the establishment of an Agricultural College upon the Fort Hill place. This institution I desire to be under the control and management of a Board of Trustees, a part of whom are hereinafter appointed, and to be modeled after the Agricultural College of Mississippi as far as practicable. My purpose is to establish an Agricultural

College which will afford useful information to the farmers and mechanics ; therefore it should afford thorough instruction in agriculture and the natural sciences connected therewith ; it should combine, if practicable, physical with intellectual education, and should be a high seminary of learning in which the graduate of the common schools can commence, pursue and finish a course of studies terminating in thorough theoretic and practical instruction in those sciences and arts which bear directly upon agriculture. But I desire to state plainly, that I wish the trustees of said institution to have full authority and power to regulate all matters pertaining to said institution, to fix the course of studies, to make rules for the government of the same, and to change them, as in their judgment experience may prove necessary ; but to always bear in mind that the benefits herein sought to be bestowed are intended to benefit agricultural and mechanical industries. I trust I do not exaggerate the importance of such an institution for developing the material resources of the State, by affording its youth the advantage of scientific culture, and that I do not overrate the intelligence of the Legislature of South Carolina, ever distinguished for liberality, in assuming that such appropriations will be made as will be necessary to supplement the fund resulting from the bequest herein made.

ITEM 1.—I therefore give and devise to my executor hereinafter named, the aforesaid Fort Hill place, where I now reside, formerly the house of my father-in-law, John C. Calhoun, consisting of eight hundred and fourteen acres, more or less, in trust that whenever the State of South Carolina may accept said property as a donation from me, for the purpose of thereupon founding an Agricultural College, in accordance with the views I have hereinbefore expressed, (of which the Chief Justice of South Carolina shall be the Judge,) then my executor shall execute a deed of the said property to the said State and turn over to the same all property hereinafter given as an endowment of said institution, to be held as such by the said State so long as it in good faith devotes said property to the purpose of the donation : *Provided, however,* That this acceptance by the State shall be signified, and a practical carrying out

be commenced, within three years from the date of the probate of this my will. During this term of three years, or as much thereof as may elapse before the acceptance or refusal of this donation, my executor shall invest the net produce of the land and other property, such invested fund awaiting the action of the Legislature, and to form a part of the endowment of said institution, if accepted, or to form a part of the endowment of the college or school hereinafter provided for, should the donation not be accepted by the State.

ITEM 2.—The following named gentlemen, seven in number, shall be seven of the Board of Trustees, to wit: R. W. Simpson, D. K. Norris, M. L. Donaldson, R. E. Bowen, B. R. Tillman, J. E. Wannamaker, and J. E. Bradley; and the State if it accepts the donation shall never increase the Board of Trustees to a number greater than thirteen in all, nor shall the duties of said Board be taken away or conferred upon any other men or body of men. The seven Trustees appointed by me, shall always have the right, and the power is hereby given them and their successors, which right the Legislature shall never take away or abridge, to fill all vacancies which may occur in their number by death, resignation, refusal to act, or otherwise. But the Legislature may provide as it sees proper for the appointment or election of the other six Trustees, if it accepts the donation. And I do hereby request the seven Trustees above named, or such of them as may be living, or may be willing to act, to meet as soon after my death as practicable, and organize and at once fill all vacancies that may have occurred, and exert themselves to effectuate my purposes as herein set forth. And I hereby instruct my executor to notify them of their appointment herein, as soon as practicable. The name of this institution is to be "The Clemson Agricultural College of South Carolina."

ITEM 3.—Should the three years expire without the State accepting the donation, in manner hereinbefore provided, and if accepted, at the expiration of three years from my death no practicable beginning has been made to carry into effect the purposes of the donation, or if before the three years expire the Legislature shall refuse to accept said

donation, then the donation to the State is hereby revoked and my executor shall execute his trust by conveying the said Fort Hill place, and the accumulated fund arising therefrom, together with all other property, real or personal, hereinafter disposed of and intended to be given unto the said Agricultural College as an endowment, to the seven Trustees named above, or their successors, who shall erect upon the Fort Hill place such a school or college for the youth of South Carolina as in their judgment will be for their best interests: *Provided*, That said school or college be for the benefit of the agricultural and mechanical classes principally, and shall be free of cost to the pupils, so far as the means derived from the endowment hereinafter provided and the use of the land permit. The Trustees shall securely invest the fund hereinafter provided and given to said institution, and hold it as a perpetual endowment, and shall only use the interest derived therefrom and the income of the land to support and maintain said school or college, except that the accumulated fund derived from the land and the interest derived from the fund hereinafter given to said institution, from the time of my death and as much as five thousand dollars of the principal fund may be used if, in the judgment of the Trustees it may be necessary, to erect suitable buildings for said school or college. The name of this institution shall be "The Clemson Scientific School or College."

ITEM 4.—It is my desire that the dwelling house on Fort Hill shall never be torn down or altered, but shall be kept in repair, with all the articles of furniture and *virtu*, which I hereinafter give for that purpose, and shall always be open for the inspection of visitors; but a part of the house may be used by such of the Professors as the Trustees may direct.

LAWS OF CONGRESS RELATING TO THE COLLEGE.

AN ACT donating public lands to the several States and Territories which may provide Colleges for the benefit of agriculture and the mechanic arts.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be granted to the several States, for the purpose hereinafter mentioned, an amount of public land, to be apportioned to each State a quantity equal to thirty thousand acres for each Senator and Representative in Congress to which the States are respectively entitled by the apportionment under the census of eighteen hundred and sixty. *Provided,* that no mineral lands shall be selected or purchased under the provisions of this Act.

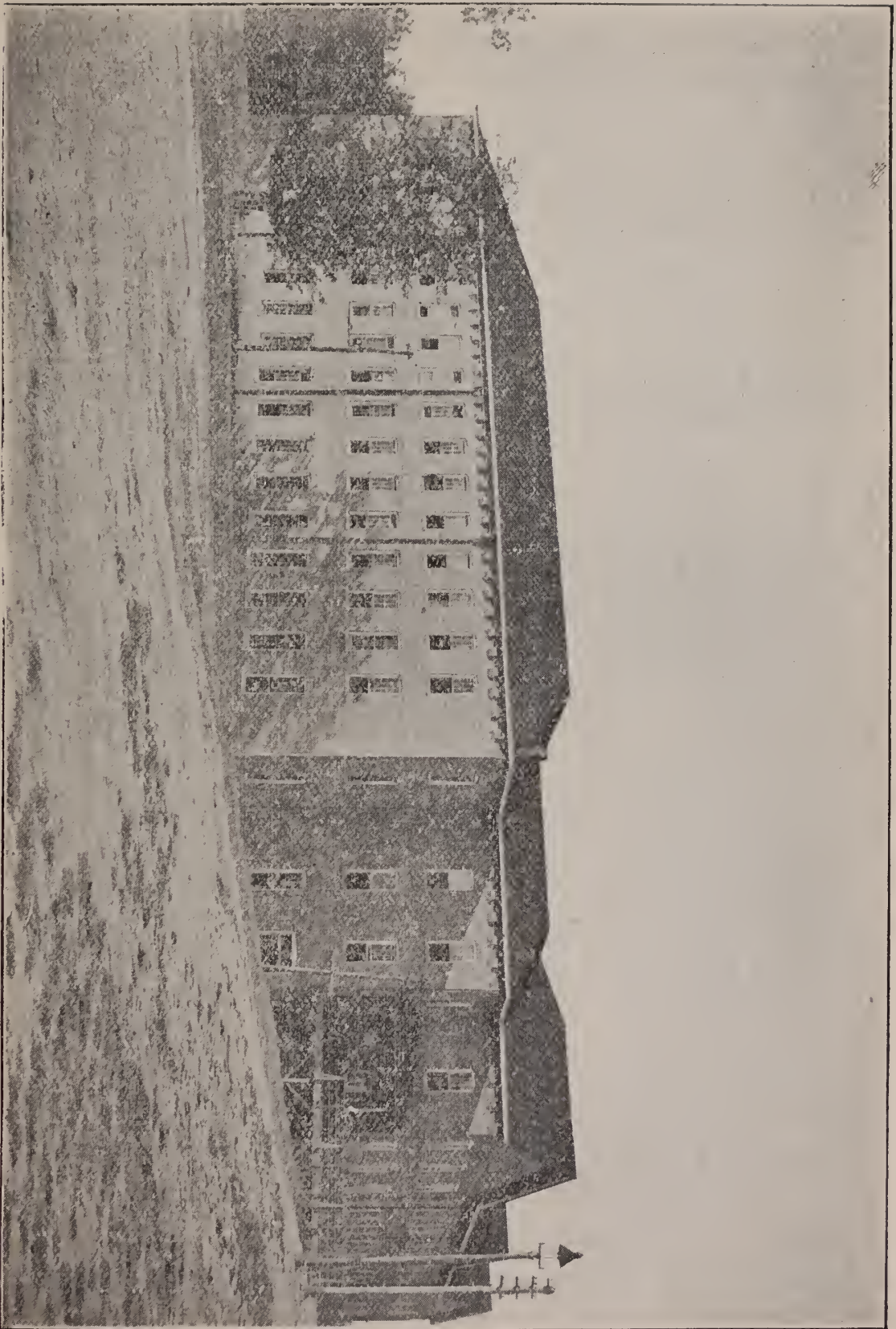
SEC. 2. *And be it further enacted,* That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or subdivisions of sections not less than one quarter of section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said State shall be entitled shall be selected from such lands within the limits of such State; and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public land subject to sale at private entry at one dollar and twenty-five cents per acre, to which said State may be entitled under the provisions of this Act, land scrip to the amount of acres for the deficiency of its distributive share; and scrip to be sold by said State, and the proceeds thereof applied to the uses and purposes prescribed in this Act, and for no other use or purpose whatever; *Provided,* that in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State, or of any Territory of the United States, but their assignees may thus locate said lands scrip upon any of the

unappropriated lands of the United States subject to sale at private entry, at one dollar and twenty-five cents or less per acre ; *and provided further*, that not more than one million acres shall be located by such assignees in any one of the States ; *and provided further*, that no such location shall be made before one year from the passage of this Act.

Sec. 3. *And be it further enacted*, That all the expenses of management, superintendence and taxes, from date of selection of said lands previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the States, to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned.

SEC. 4. *And be it further enacted*, That all moneys derived from the sale of the lands aforesaid by the States to which the lands are apportioned, and from the sale of land scrip hereinbefore provided for, shall be invested in stocks of the United States, or of the States, or of some other safe stocks yielding not less than five per centum upon the par value of said stocks ; and that the moneys so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in fifth section of this Act), and the interest of which shall be inviolably appropriated by each State which may take and claim the benefit of this Act to the endowment, support and maintenance of at least one College, where the leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, and in such manner as the legislature of the States may prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

SEC. 5. *And be it further enacted*, That the grant of land and land scrip hereby authorized shall be made on the following conditions, to which as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative acts.



BARRACKS.

1. If any portion of the fund invested as provided by the foregoing section, or any portion of the interest thereon, shall by any act or contingency be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished ; and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this Act, except that a sum not exceeding ten per centum upon the amount received by any State under the provisions of this Act may be expended for the purchase of lands for sites of experiment farms whenever authorized by the respective Legislatures of said States.

2. No portion of said fund, nor interest thereon, shall be applied directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings.

3. Any State which may take and claim the benefit of the provisions of this Act, shall provide within five years at least not less than one College, as described in the fourth section of this Act, or the grant to said State shall cease ; and said State shall be bound to pay the United States the amount received of any lands previously sold, and the title to purchasers under the State shall be valid.

4. An annual report shall be made regarding the progress of each College, recording any improvements and experiments made, with their costs and results, and such other matters, including State and industrial statistics, as may be supposed useful ; one copy of which shall be transmitted by mail free by each to all the other Colleges which may be endowed under the provisions of this Act, and also one copy to the Secretary of the Interior.

5. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the States at the maximum price, and the number of acres proportionately diminished.

6. No State, while in a condition of rebellion or insurrection against the government of the United States, shall be entitled to the benefit of this Act.

7. No State shall be entitled to the benefit of this Act

unless it shall express the acceptance thereof by the Legislature within two years of the date of its approval by the President.

SEC. 6. *And be it further enacted*, That land scrip issued under the provisions of this Act shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

SEC. 7. *And be it further enacted*, That the land officers shall receive the same fees for locating land scrip issued under the provisions of this Act as are now allowed for the location of military bounty land warrants under existing laws; *Provided*, that maximum compensation shall not be thereby increased.

SEC. 8. *And be it further enacted*, That the Governors of the several States to which scrip shall be issued under this Act shall be required to report annually to Congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

Approved July 2, 1862.

AN ACT to establish Agricultural Experiment Stations in connection with the colleges established in the several States under the provisions of an act approved July 2, 1862, and of the Acts supplementary thereto.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of College or Colleges, or Agricultural Department of Colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an Act approved July 2, 1862, entitled "An act donating public lands to the several States and Territories which may provide Colleges for the benefit of Agriculture and the Mechanic Arts," or any of the supplements to said Act, a department known and designated as an "Agricultural Ex-

periment Station ;" *Provided*, that any State or Territory in which two such Colleges have been or may be so established, the appropriation hereinafter made to such State or Territory shall be equally divided between such Colleges, unless the Legislature of such State or Territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals ; the disease to which they are severally subject, with the remedies for the same ; the chemical composition of useful plants at their different stages of growth ; the comparative advantages of rotative cropping as pursued under a varying series of crops ; the capacity of new plants or trees for acclimation ; the analysis of soils and water ; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds ; the adaptation and value of grasses and forage plants ; the composition and digestibility of the different kinds of food for domestic animals ; the scientific and economic questions involved in the production of butter and cheese ; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying condition and needs of the respective States and Territories.

SEC. 3. That in order to secure, as far as practicable, uniformity of methods and results in the work of said stations, it shall be the duty of the United States Commissioner of Agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiments ; to indicate, from time to time, such lines of inquiry as to him shall seem most important ; and, in general, to furnish such advice and assistance as will promote the purposes of this Act. It shall be the duty of each of said stations annually, on or before the first day of February, to make to the governor of the State or Territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures, a copy of which report shall be sent to each of said stations, to the said commissioner of agriculture, and to the secretary of the treasury of the United States.

SEC. 4. That bulletins or reports of progress shall be

published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the postmaster general may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore prescribed, the sum of \$15,000 per annum is hereby appropriated to each State, to be especially provided for by congress in the appropriations from year to year, and to each Territory entitled under the provisions of section eight of this Act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the Treasurer or other officer duly appointed by the governing boards of said Colleges to receive the same, the first payment to be made on the first day of October, 1887; *Provided*, however, that out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement, or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

SEC. 6. That whenever it shall appear to the Secretary of the Treasury from the annual statement of receipts and expenditures of any of said stations that a portion of the preceding annual appropriation remains unexpended, such amount shall be deducted from the succeeding annual appropriation to each station, in order that the amount of money appropriated to any station shall not exceed the amount actually and necessarily required for its maintenance and support.

SEC. 7. That nothing in this Act shall be construed to impair or modify the legal relation existing between any of the said Colleges and the government of the States or Territories in which they are respectively located.

SEC. 8. That in States having Colleges entitled under this section to the benefits of this Act and having also Agricultural Experiment Stations established by law separate from said Colleges, such States shall be authorized to apply such benefits to experiments at stations so established by such States ; and in case any State shall have established under the provisions of said Act of July 2d aforesaid, an Agricultural Department or Experimental Station, in connection with any University, College or institution not distinctively an Agricultural College or School, and such State shall have established or shall hereafter establish a separate Agricultural College or School, which shall have connected therewith an Experimental Farm or Station, the Legislature of such State may apply in whole or in part the appropriation by this Act made, to separate Agricultural College or School, and no Legislature shall by contract expressed or implied disable itself from so doing.

SEC. 9. That the grant of moneys authorized by this Act are made subject to the legislative assent of the several States and Territories to the purposes of said grants ; *Provided*, that payment of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of its Legislature meeting next after the passage of this Act shall be made upon the assent of the Governor thereof, duly certified to by the Secretary of the Treasury. ♦

SEC. 10. Nothing in this Act shall be held or construed as binding the United States to continue any payments from the Treasury to any or all the States or institutions mentioned in this Act, but Congress may at any time amend, suspend or repeal any or all the provisions of this Act.

Approved, March 2, 1887.

AN ACT to supply a portion of the public lands to the more complete endowment and support of Colleges for the benefit of agriculture and the mechanic arts, established under the provisions of an act of Congress, approved July second, eighteen hundred and sixty-two.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,
That there shall be, and hereby is, annually appropriated out of any money in the Treasury not otherwise appropriated,

arising from the sales of public lands, to be paid as hereinafter provided, to each State and Territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may be hereafter established, in accordance with an Act of Congress, approved July second, eighteen hundred and sixty-two, the sum of fifteen thousand dollars for the year ending June thirtieth, eighteen hundred and ninety, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of one thousand dollars over the preceding year, and the annual amount to be paid thereafter to each State and Territory shall be twenty-five thousand dollars, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction; *Provided*, that no money shall be paid out under this Act to any State or Territory for the support and maintenance of a college where a distinction of race or color is made in admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such State or Territory be equitably divided as hereinafter set forth; *Provided*, that in any State in which there has been one college established in pursuance of the Act of July second, eighteen hundred and sixty-two, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such State from its own revenue for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the Act to which this Act is an amendment, the Legislature of such State may propose and report to the Secretary of the Interior a just and equitable division of the funds to be received under this Act between one college for white students and one institution for colored students established as aforesaid, which shall be divided into two parts and paid accordingly, and thereupon such institution for colored students

shall be entitled to the benefits of this Act and subject to its provisions, as much as it would have been if it had been included under the act of eighteen hundred and sixty-two, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

SEC. 2. That the sums hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the thirty-first day of July of each year, by the Secretary of the Treasury upon the warrant of the Secretary of the Interior, out of the Treasury of the United States, to the State or Territorial Treasurer or to such officer as shall be designated by the laws of such State or Territory to receive same, who shall, upon the order of the trustees of the college, or the institution for colored students, immediately pay over said sums to the treasurers of the respective colleges or other institutions entitled to receive the same, and such treasurers shall be required to report to the Secretary of Agriculture and to the Secretary of the Interior on or before the first day of September of each year, a detailed statement of the amount so received and of its disbursement. The grants of moneys authorized by this Act are made subject to the legislative assent of the several States and Territories to the purpose of said grants: *Provided*, that payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of Legislature meeting next after the passage of this Act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 3. That if any portion of the moneys received by the designated officer of the State or Territory for the further and more complete endowment, support and maintenance of colleges, or of institutions for colored students, as provided in this Act, shall, by any action or contingency, be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory; and no portion of said moneys shall be applied directly or indirectly, under any

pretense whatever, to the purchase, erection, preservation or repair of any building or buildings. An annual report by the president of each of said colleges shall be made to the Secretary of Agriculture, as well as to the Secretary of the Interior, regarding the condition and progress of each college, including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any Experiment Stations attached to said colleges with their costs and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail to all other colleges further endowed under this Act.

SEC. 4. That on or before the first day of July in each year, after the passage of this Act, the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory, whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this Act, and the amount which thereupon each is entitled respectively, to receive. If the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior. If the next Congress shall not direct such sum to be paid it shall be covered into the treasury. And the Secretary of the Interior is hereby charged with the proper administration of this law.

SEC. 5. That the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld, and if so, the reasons therefor.

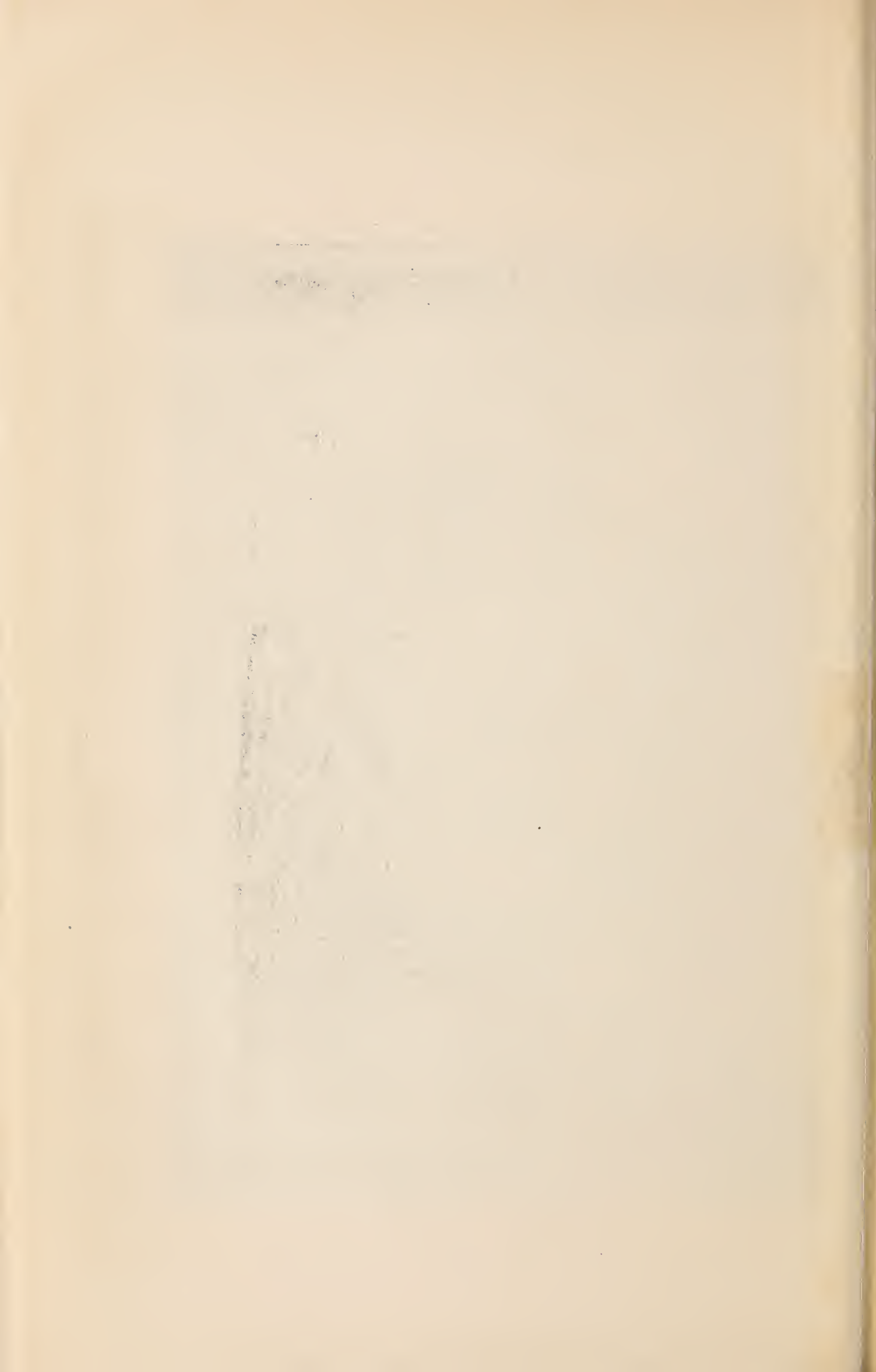
SEC. 6. Congress may at any time amend, suspend or repeal any or all of the provisions of this Act.

Approved August 30, 1890.



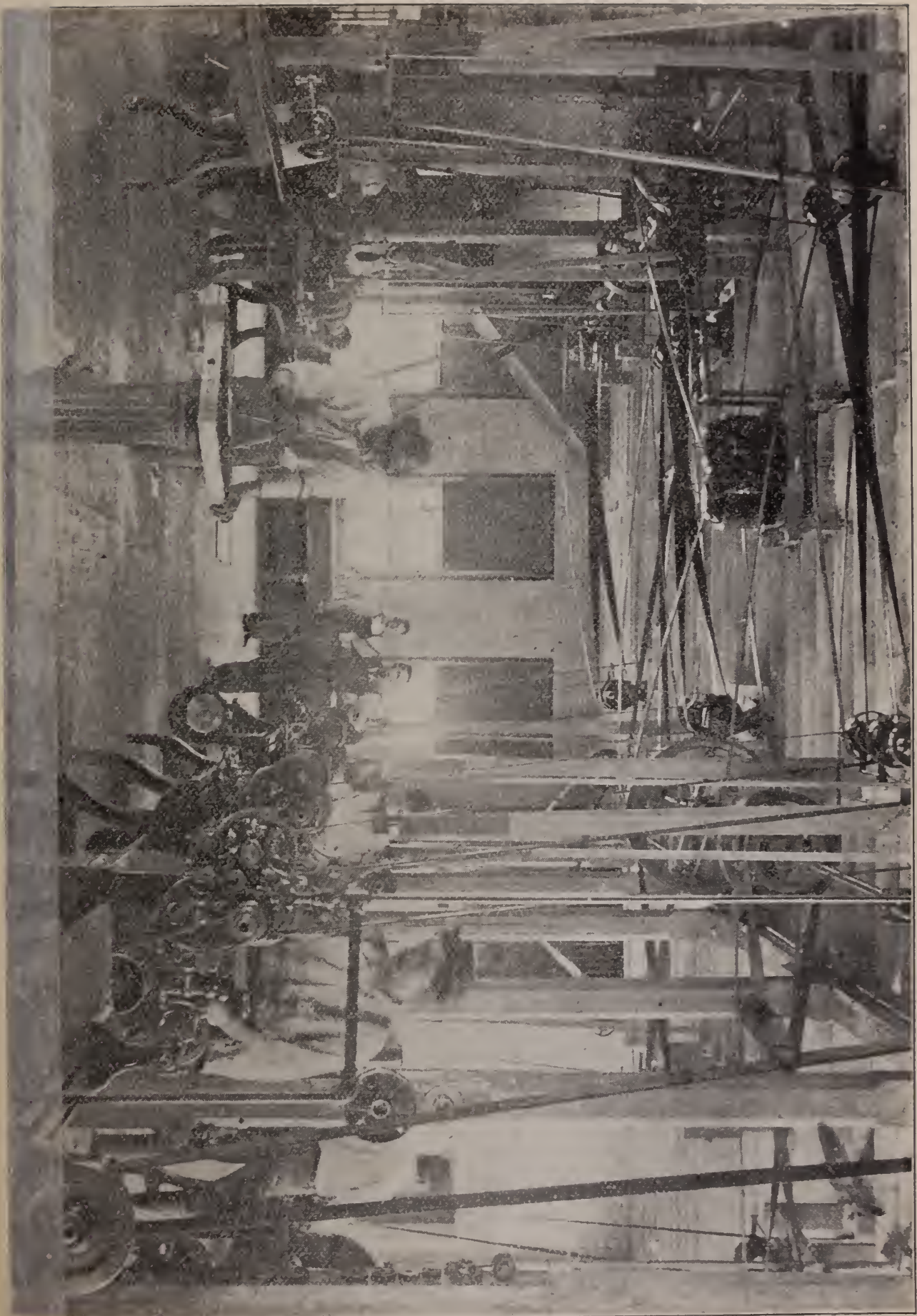
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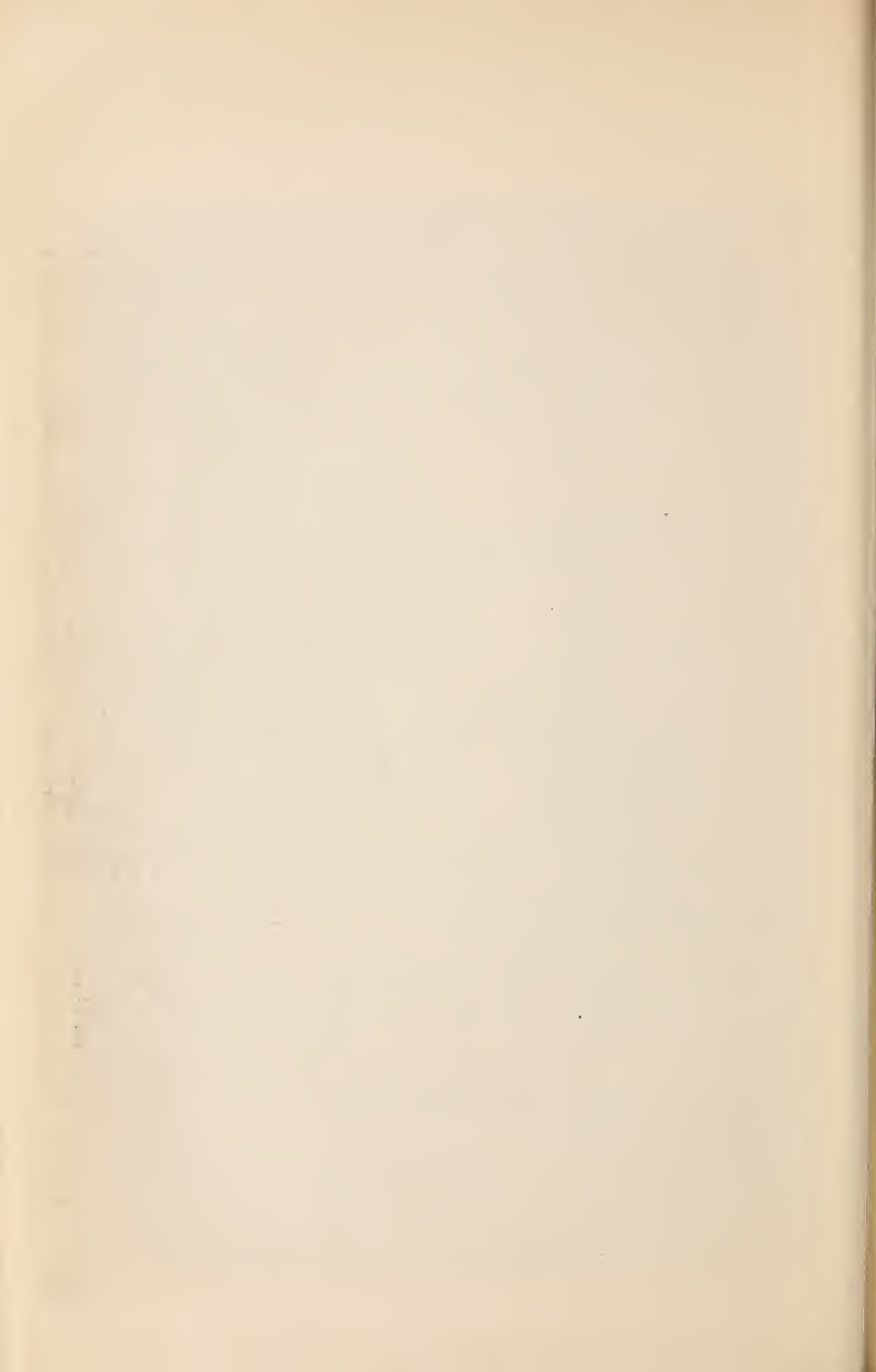
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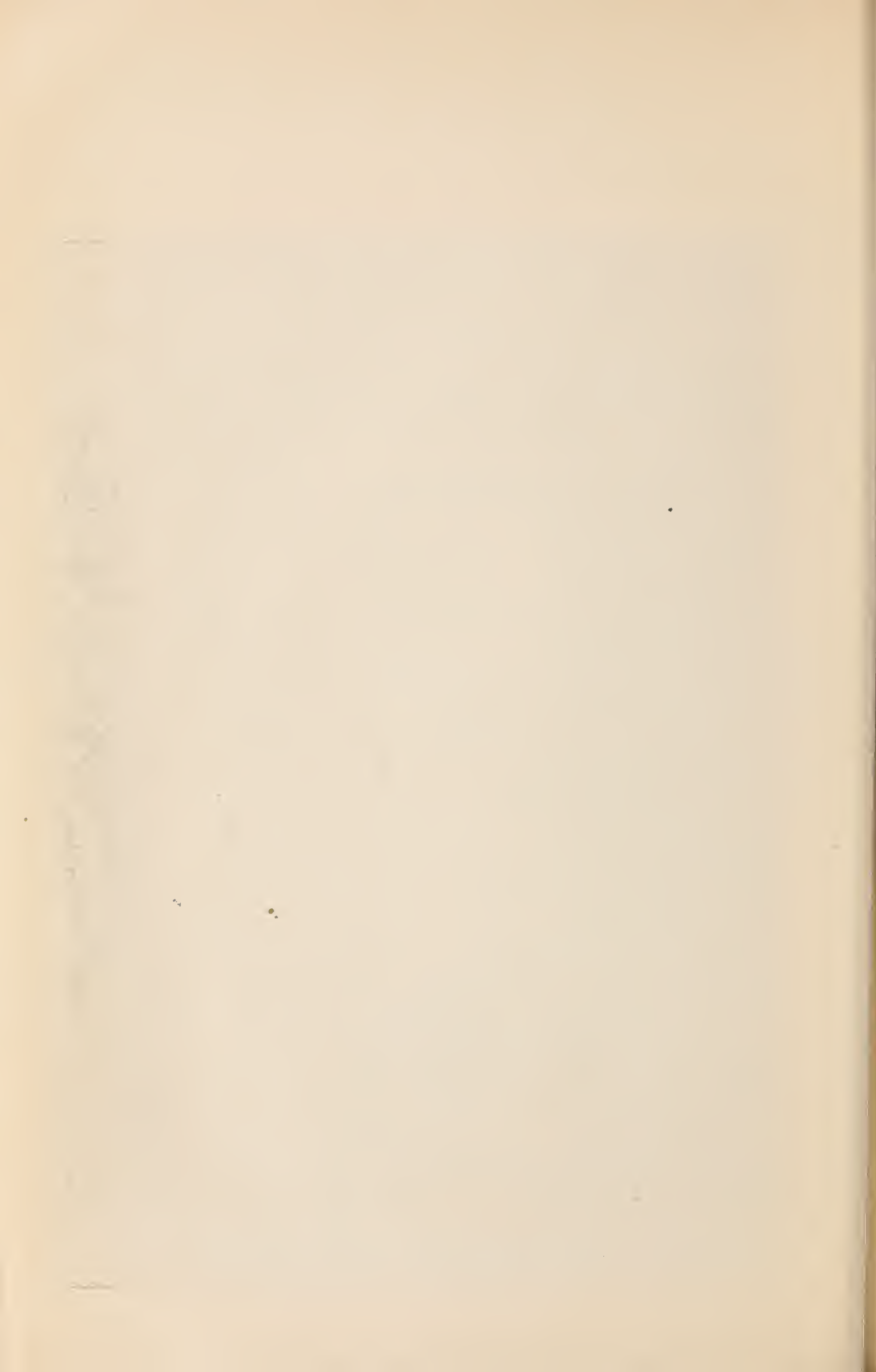


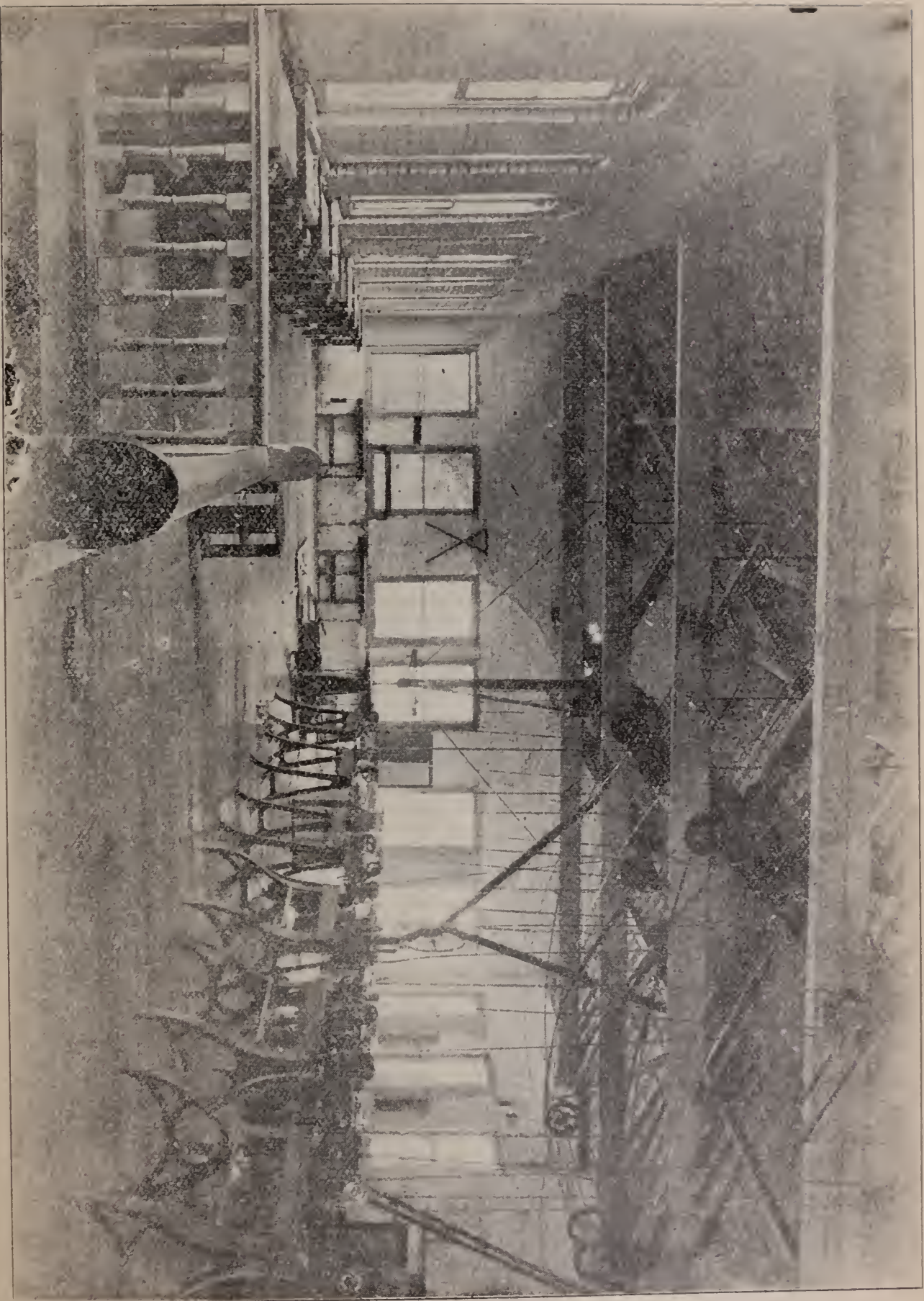




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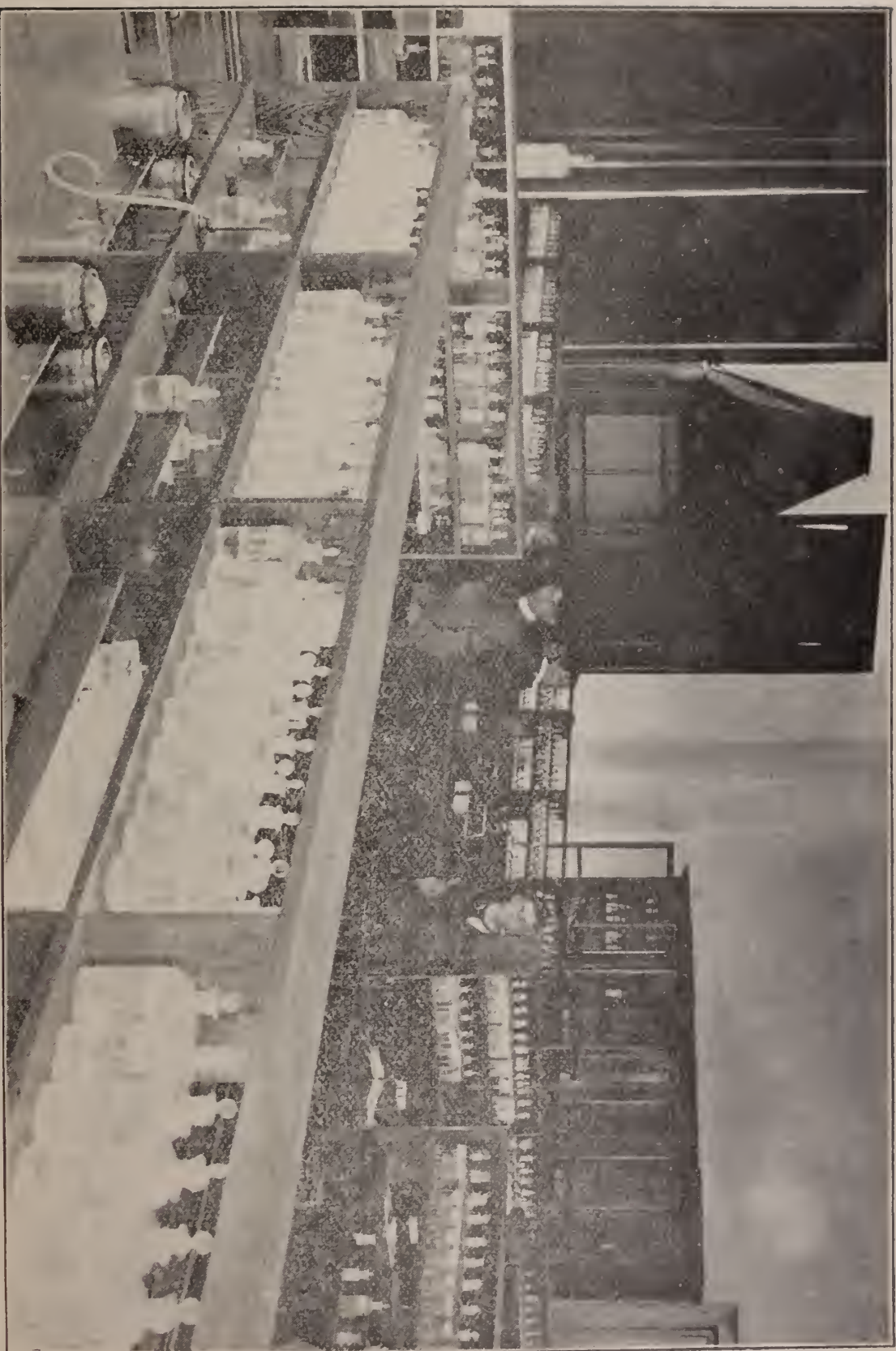
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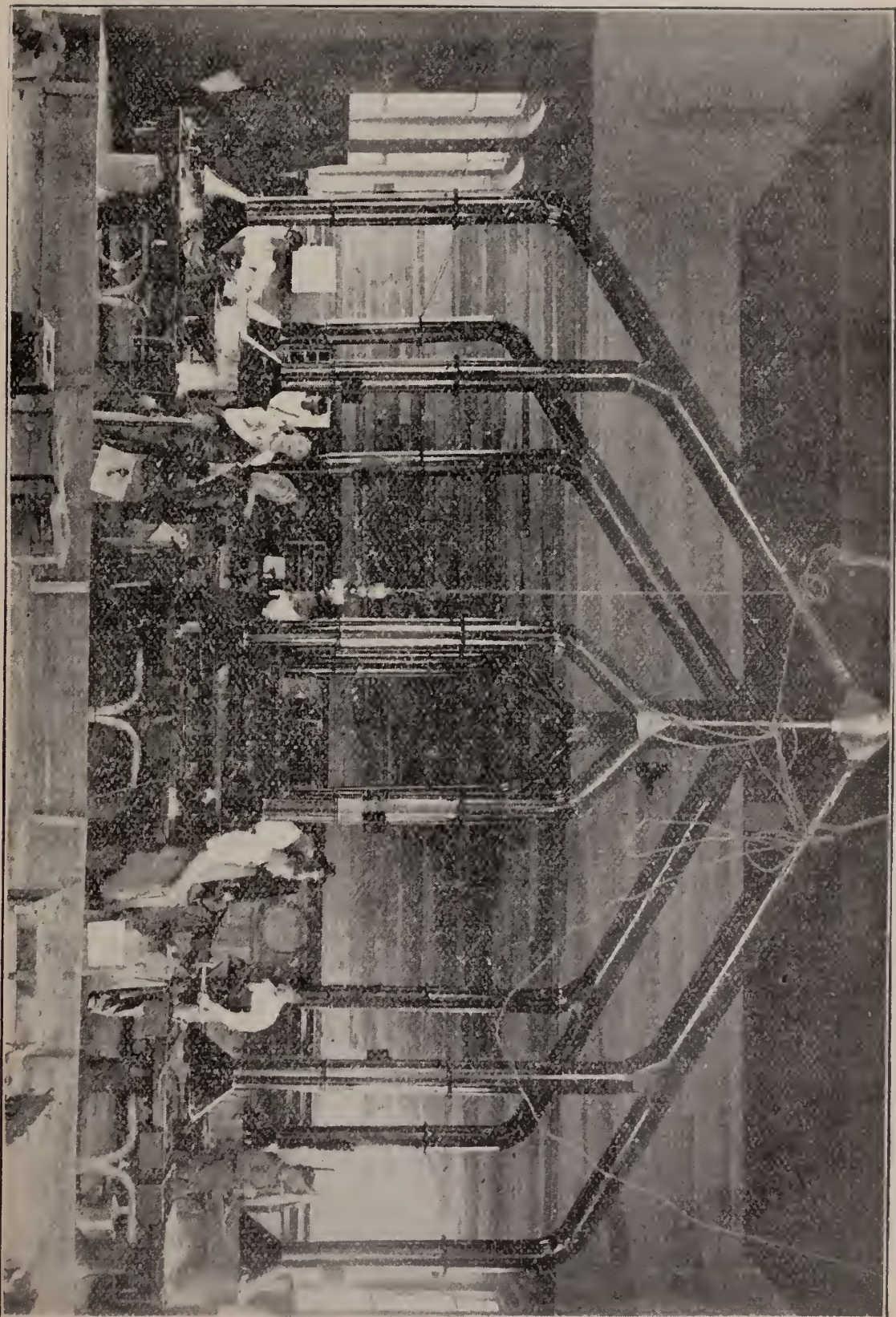
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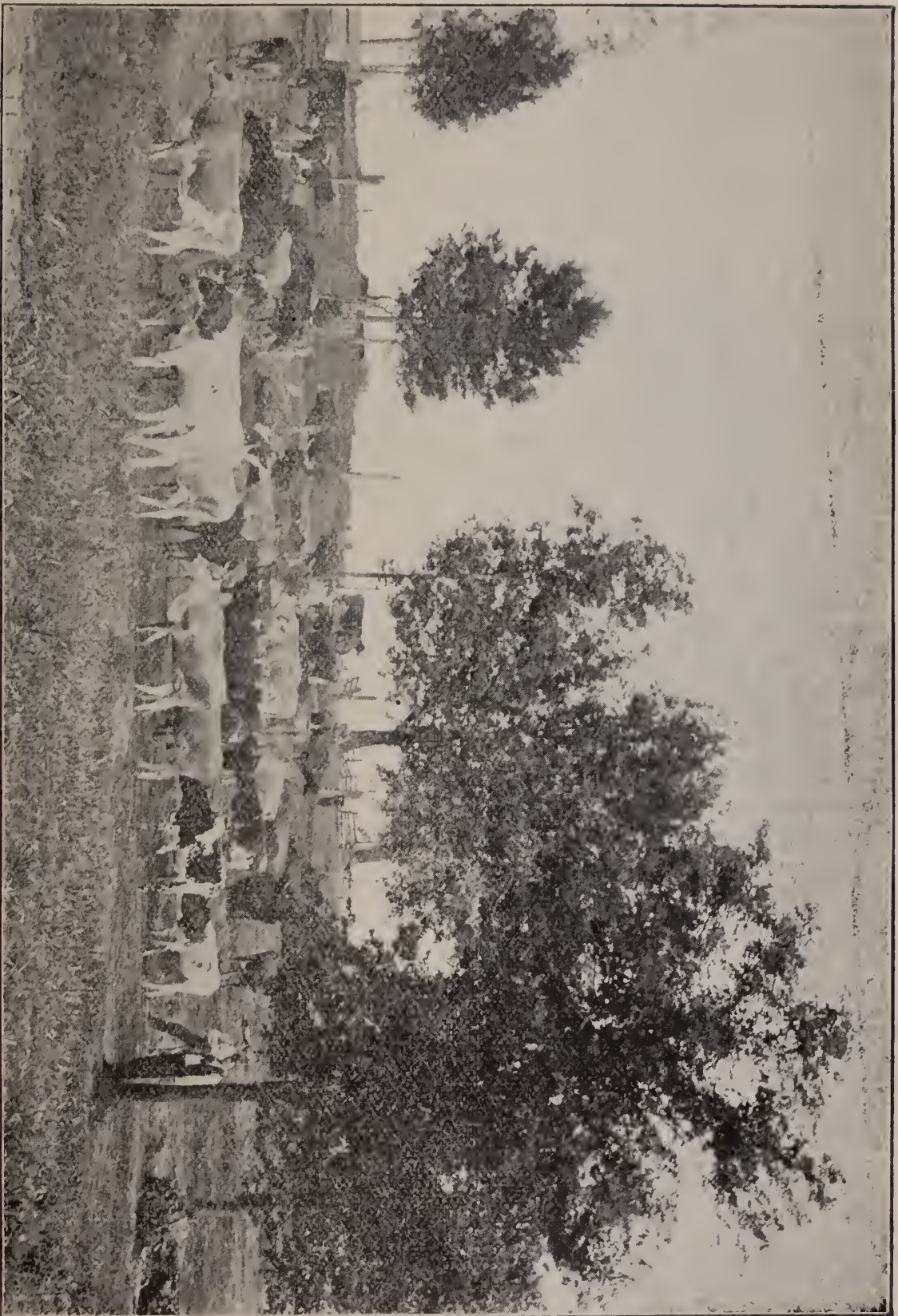




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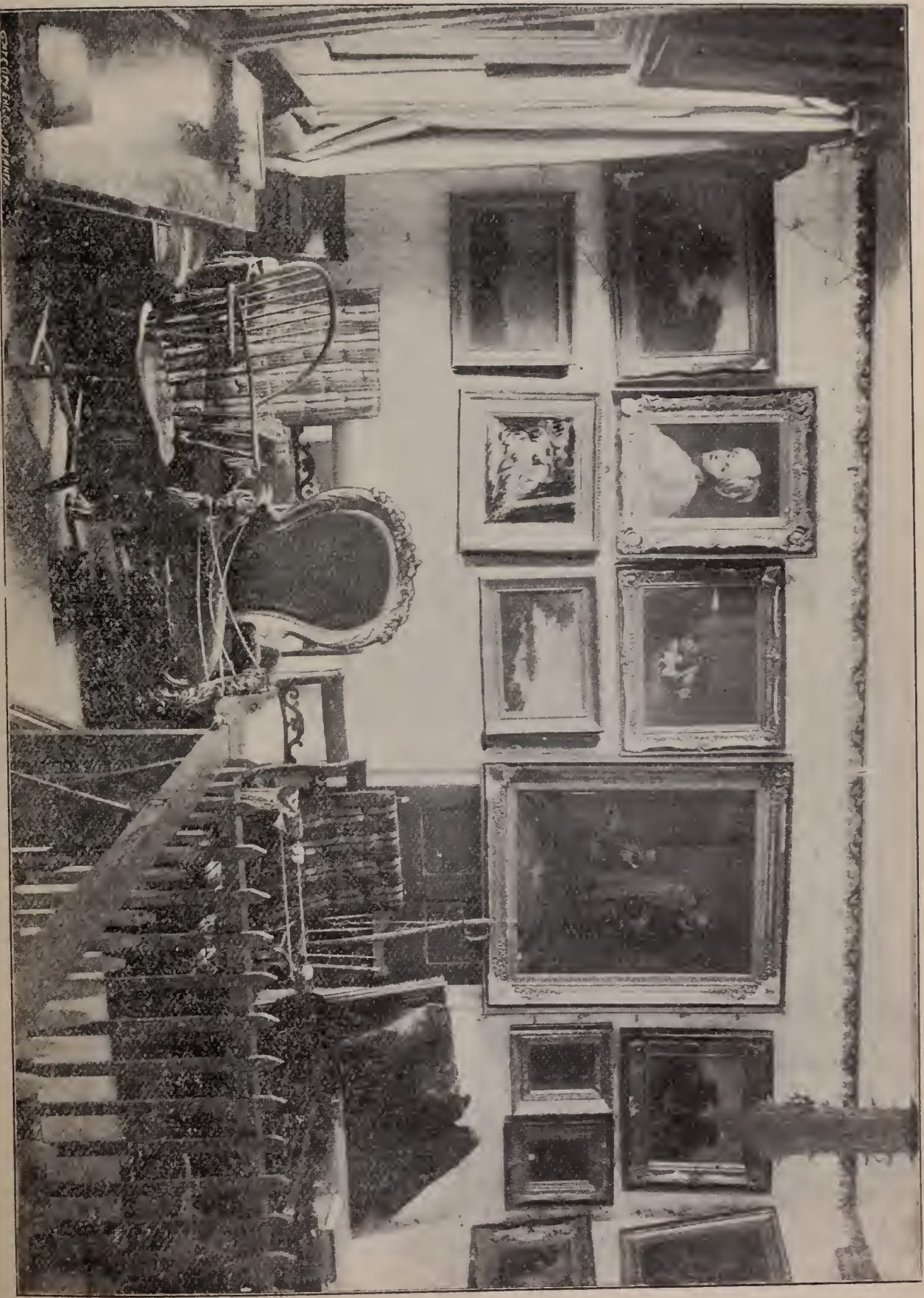
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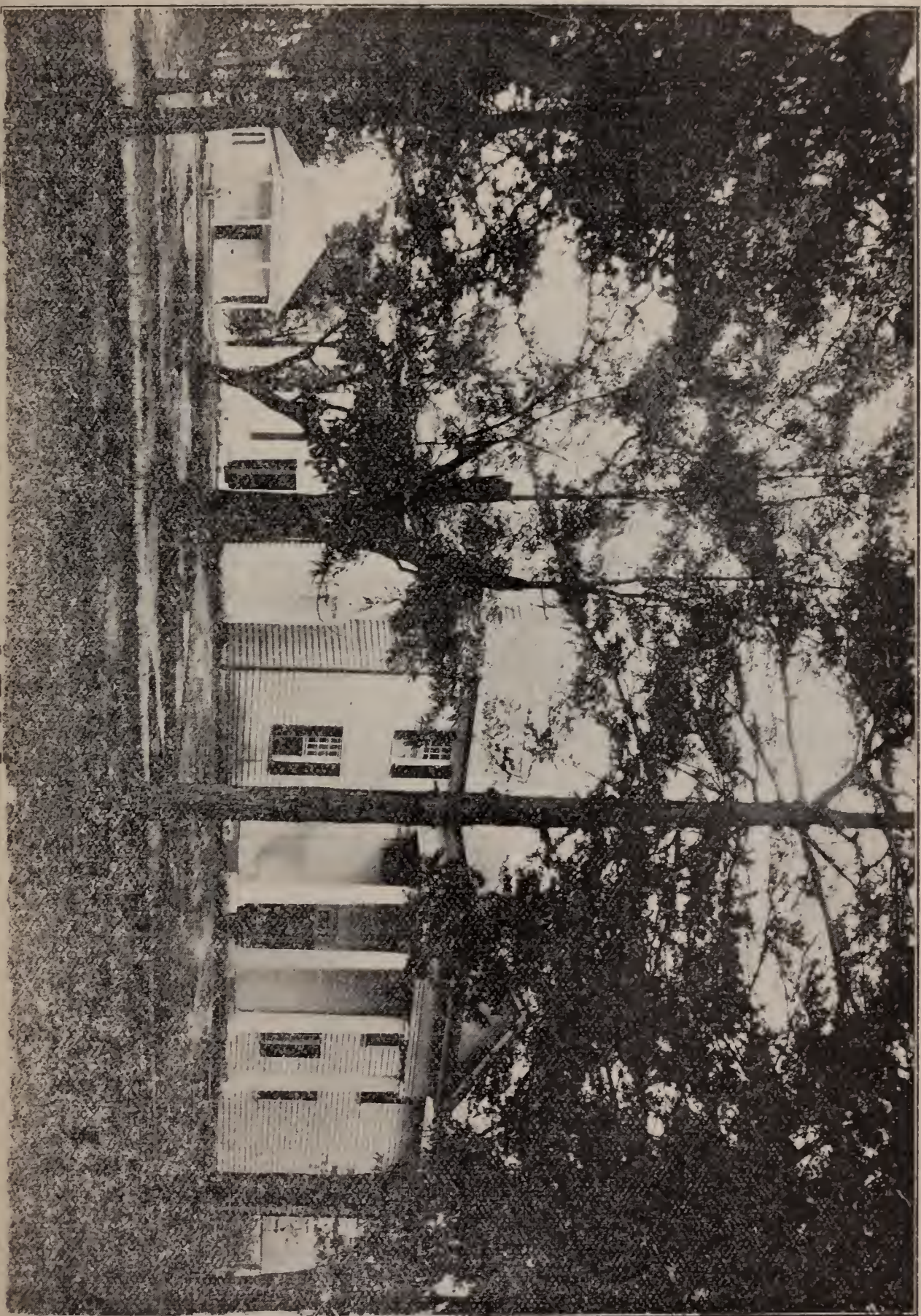
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View in
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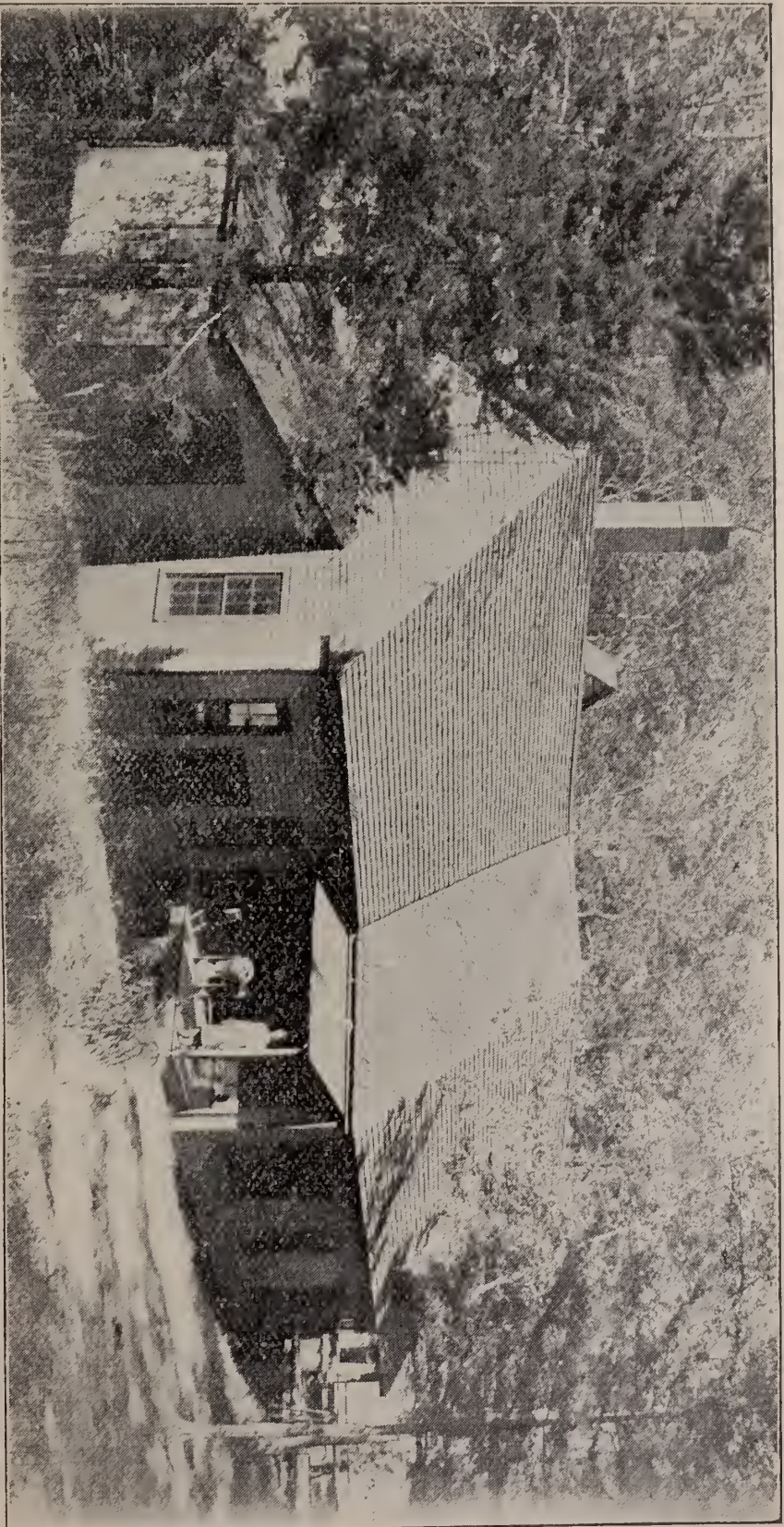
JOHN C. CALHOUN MANSION.





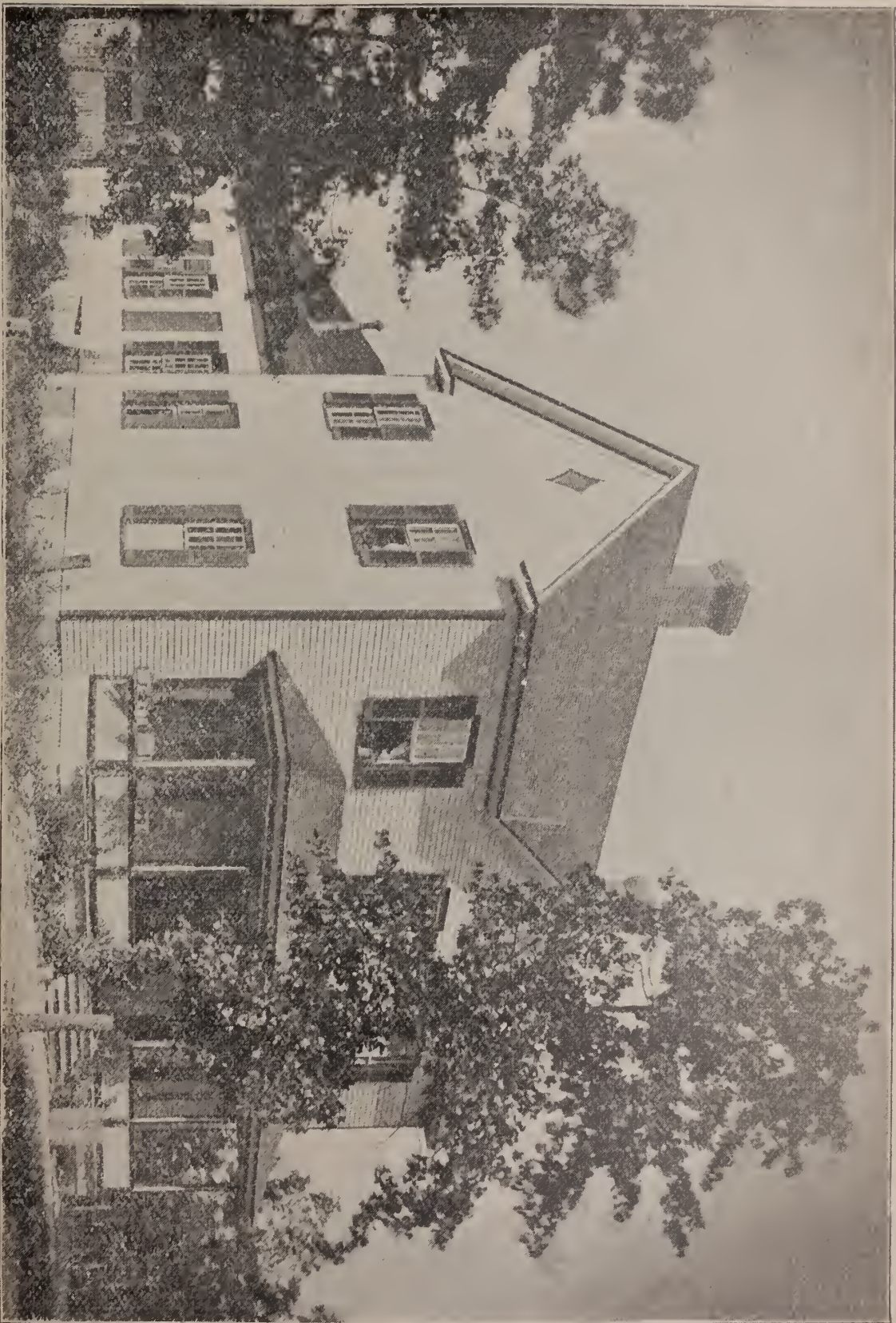
PROFESSOR'S RESIDENCE.





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CHEMICAL LABORATORY.



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1847-48



MAIN COLLEGE BUILDING.

THE CLEMSON
Agricultural and Mechanical College

... OF ...

SOUTH CAROLINA.

ANNUAL CATALOGUE,

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46

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June 8, End of Session, 1897-8.

Sept. 14, Beginning of Session, 1898-9.

1899.

Jan. 28, End of First Term, 1898-9.

June 14, End of Session, 1898-9; Third Annual Commencement.

OFFICIAL TITLE.

The official title of the Institution is THE CLEMSON AGRICULTURAL COLLEGE OF SOUTH CAROLINA.

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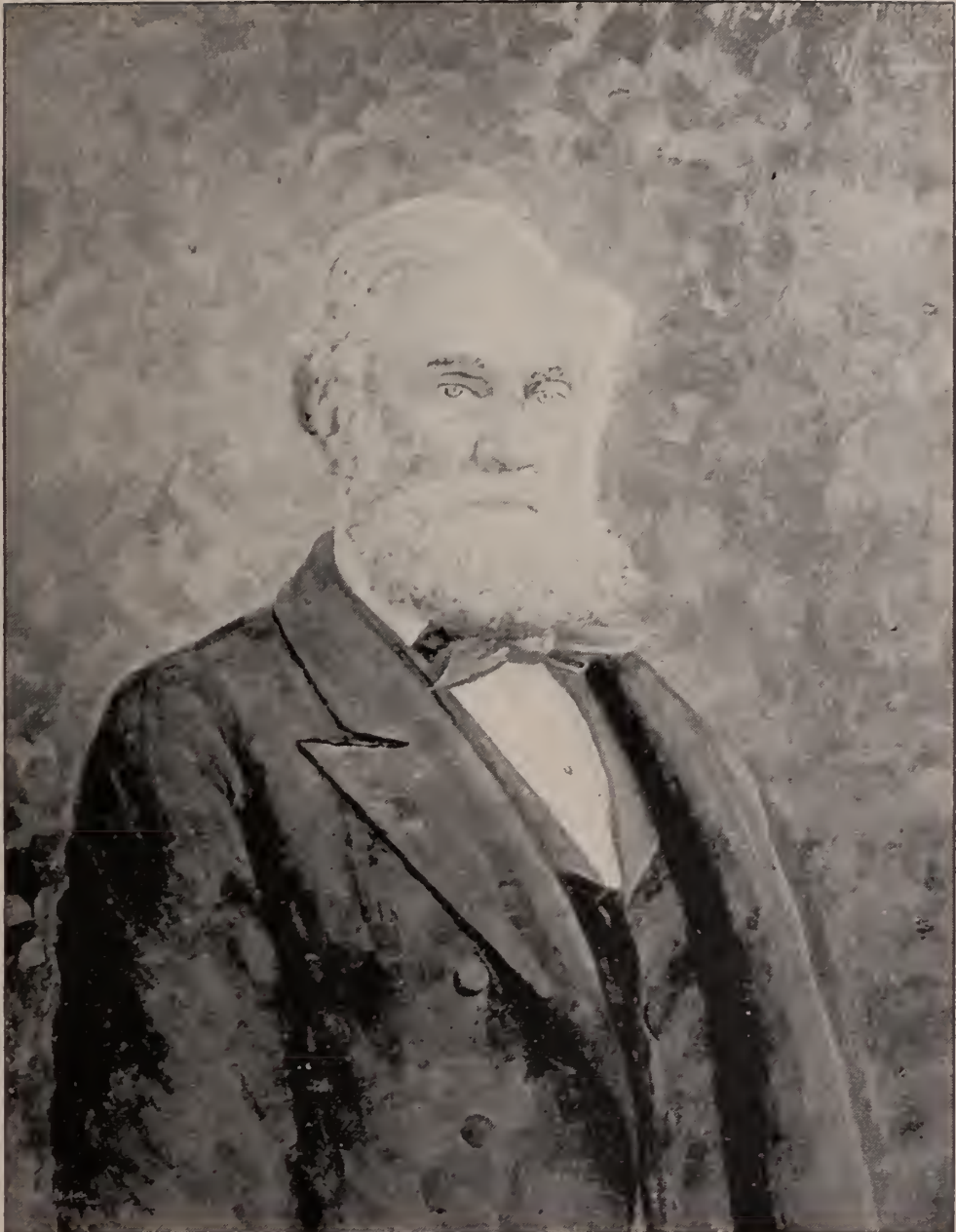
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THOMAS G. CLEMSON.



BIOGRAPHICAL SKETCH OF THOMAS G. CLEMSON.

BY HON. R. W. SIMPSON.

Thomas G. Clemson was born in the City of Philadelphia, July 1807, died at Fort Hill, April 6th, 1888, and was buried in the Episcopal churchyard at Pendleton, S. C.

Mr. Clemson was six feet six inches tall, his features were handsome, and his appearance commanding; his deportment and manners were dignified and polished. His intellect was of a high order, and he was gifted with fine conversational powers. His views and opinions were broad and liberal, and there was nothing narrow or contracted about him; withal he was firm and tenacious in adhering to his conclusions. He was remarkably quick to discover and comprehend the character of his associates, and in forming his opinions of them he was almost always correct.

Mr. Clemson no doubt may have had his faults, and in some things he was peculiar, but during the long time the writer was intimately associated with him, he was never known to do a mean thing or heard to backbite or speak disrespectfully of any one. While possessed of ample means, he had no disposition to spend more money upon himself than was actually necessary. His greatest desire was to take care of his property and increase it that he might the better carry out his promise to his wife, which was to found an agricultural college upon Fort Hill, upon the very spot she herself had selected for the location of the main college building. How faithfully he redeemed his promise to his dear wife, let Clemson College as it stands to-day in all its magnificence speak. Mr. Clemson well knew that the property donated for the purpose would not be sufficient to build and maintain such a college as he conceived of; but having a firm reliance upon the liberality of the State of South Carolina, he felt assured that when the necessities of the people, growing out of their changed conditions resulting from the effects of the war, were properly understood and appreciated, his efforts to benefit the farmers would be recognized; and that the State would supplement his donation by whatever amount might be necessary to establish the dream of his life. He reasoned wisely and correctly.

Very early in life Mr. Clemson developed a great taste for the study of the sciences, especially chemistry, mineralogy and geology. In 1823, when hardly sixteen years old, he ran off from his home, not on account of any disagreement with his parents, but simply for adventure and to see the world. At that time he, though so young, was six feet tall and exceedingly handsome, both in form and features. He first went to England, but remained there only a short time and then visited Paris. At this time France was particularly friendly towards the United States and this handsome young American very soon attracted the attention of the young nobility of that great city. Through these young men he also became acquainted with some of the leading officials of the city. During his stay in Paris he shouldered a musket and joined his young friends in several of the revolutions or outbreaks for which that city has been famous. His gallantry displayed on these occasions earned for him the respect and esteem of the officials, who rewarded him with a position in the celebrated School of Mines. He remained at the school for four years and graduated with high honors. During his stay in Paris he also found time to indulge his taste for painting, and had as his teachers some of the celebrated artists of that time. By these means he became acquainted with many painters both in France and Germany, which enabled him in after years to collect the many rare and beautiful paintings which now adorn the walls of John C. Calhoun's old homestead at Fort Hill.

During his stay in Europe his father died and the large estate was divided in such way as to leave him no part of it, and just at the age of manhood he found himself penniless; but he cheerfully set to work in the practice of his profession and very soon earned an enviable reputation. His services as a mine expert were particularly valuable, and though established at Washington, his labors were not confined to this country alone, but extended to Cuba and South America also. His fees were large and he very soon amassed a comfortable fortune. At Washington he was a conspicuous and prominent person, and he had the entry into the most exclusive families. Miss Floride, the eldest daughter of John C. Calhoun, was in Washington on a visit to her father, and there Mr. Clemson met her, and subsequently they were married at Fort Hill. Mrs. Clemson was among women what her distinguished father was

among men. Her love for her home and country was superb, and to this noble, generous and yet gentle woman, South Carolina is as much indebted for Clemson College as to the distinguished husband, Thos. G. Clemson. Mr. Clemson was a great admirer of John C. Calhoun, and earnestly supported his political views and opinions. During the administration of President Jackson he was appointed Minister to Belgium, but having very little taste for politics, at the expiration of his term he returned to his home in Washington, and resumed the work of his profession.

At the beginning of the war Mr. Clemson was residing at his home in Washington city with his family, which consisted of his wife, his son John C. Clemson, and daughter Floride Clemson—the son and daughter about grown.

It was well known to the authorities that the sympathies of Mr. Clemson were with the South and for this reason his movements were closely watched, and some time in 1862 his arrest was ordered; but being warned by a friend that he would be arrested the next day, he and his son escaped during the night and crossed the Potomac in a row boat. Landed on Virginia soil, they did not stop until they reached Richmond, having walked the entire distance. Upon arriving in Richmond they both tendered their services to President Davis. John C. was at once appointed a Lieutenant in the army and assigned to duty. Mr. Clemson was assigned to the mining department of the trans-Mississippi. Here he remained in the service until the close of the war.

At this time Mrs. John C. Calhoun resided at Pendleton; and here Mr. Clemson was reunited with his family, and here they resided until the death of Mrs. Calhoun in the latter part of 1866.

Previous to the war Mrs. Calhoun had sold their old home, Fort Hill, and all her property thereon to her son Col. Andrew P. Calhoun, taking his bond and mortgage for the purchase money. Of this bond and mortgage Mrs. Calhoun willed three-fourths to her daughter Mrs. Thos. G. Clemson, and one-fourth to Mrs. Clemson's daughter Miss Floride, who subsequently married Mr. Gideon Lee, of New York. The mortgage of Col. A. P. Calhoun was foreclosed and Mrs. Clemson bought in Fort Hill, and divided it with her daughter Mrs. Lee in proportion to the interest of each under Mrs. Calhoun's will. In 1871 Mrs. Floride Lee died, leaving one child, a daughter. Only seventeen days after Mrs. Lee's death John C. Clemson was killed near Seneca by a collision of two trains on the Blue Ridge Railroad. The loss of their only two children was a terrible shock to Mr. and Mrs. Clemson. Desolate, they mourned the loss of all the brightness out of their lives; but unsearchable are the providences of God, for it was then that these two stricken, sorrowing parents determined to unite in so disposing of all they had left of their property as to bring to their fellow men as much happiness and prosperity as they could have wished for themselves. They agreed to make wills to each other, and promised that the survivor would make a will donating all of their joint property to erect an Agricultural College at Fort Hill.

In 1875 Mrs. Clemson died suddenly of heart disease while Mr. Clemson was absent from home. Many persons in Pendleton remember the grief of this old and now desolate man at the grave when the remains of the devoted partner of his life were being laid to rest.

The remaining years of his life Mr. Clemson spent, desolate and alone, at Fort Hill. After awhile he began to take more interest in affairs. He was fond of reading, and kept around him the leading newspapers and standard magazines, by which he was enabled to keep in touch with his fellow men; otherwise he lived the life of a hermit, at least for several years after the death of Mrs. Clemson.

Eventually, however, his mind became fixed upon the one purpose of fulfilling the promise to his wife and erecting the College they had planned. Then he began again to visit his friends, and many were the efforts he and his friends made to interest others in this great work.

During this time he looked carefully after his finances, and tried to save all he could for the College. But still he provided generously for the faithful helps who remained with him, and wished very much to help other poor friends in distress, and did so.

It was the privilege of the writer to visit him frequently during the last two years of his life, and during this time he talked freely of his life and experiences. He portrayed in a manner never to be forgotten, the condition the South was sure to be plunged into, if something was not done to arrest the destructive tendencies of the times. Education such as we had before our conditions were changed by the war, was all right, but not enough. To become successful the Southern people had to become practical, and a practical education was necessary to meet the people's necessities.

During the latter part of his life he talked a great deal about religious matters and became very much concerned about the salvation of his soul. He requested the ministers to visit him. One good man who was with him to the last, said that beyond a doubt, he had made his peace with his God, and his last words were in behalf of the poor and suffering. Can the people of South Carolina ever forget Thos. G. Clemson, and the great work he helped to accomplish for them? If this is possible, visit Fort Hill and look around you.

GENERAL INFORMATION.

Origin and Objects.

In 1886 a convention of the farmers of South Carolina passed a resolution advocating the establishment of an Agricultural College. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who died in 1888, leaving as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and about \$80,000 in other securities, for the purpose of establishing an Agricultural College.

The Legislature passed an act which became a law in November, 1889, accepting the bequest. The College opened July 6, 1893, with an enrollment during its first session of 446 students.

The object of the College, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and applications of the sciences bearing upon agriculture and mechanics; and to give the breadth and culture necessary for a rounded education, liberal courses are provided in history, economics and English.

It is considered of the utmost importance that students be taught, not only theoretical methods, but practical work in these methods. To this end, as much time is devoted to laboratory and shop work, field instruction, and other practical exercises, as to lectures and recitations.

Location.

The College is located on the dividing line between Oconee and Pickens counties, in the picturesque foot hills of the Blue Ridge mountains. It has an elevation of about 900 feet above sea level, and commands an excellent view of the mountains to the north and west, some of which attain an altitude of nearly 5,000 feet. The climate is invigorating and healthful and the surroundings are in every way favorable to the highest physical and mental development. The buildings are located on the old Fort Hill homestead of John C. Calhoun.

The College is one mile from Calhoun, a station on the main line of the Southern Railway, and two miles from Cherrys, on the Blue Ridge Railroad. By means of these roads and their connections, the College is easily accessible from all parts of the State, as shown by the accompanying railroad map. It is also connected by tele-

phone with Calhoun and Pendleton, and thence by telegraph with all parts of the country. The postoffice is conveniently situated on the campus, and receives five daily mails.

College Grounds and Buildings.

GROUNDS.—The College grounds occupy about two hundred acres of land, including the campus, sites of buildings and residences, and grounds for military drill and outdoor athletics. The campus is laid out in walks, drives and lawns, and is shaded by a beautiful grove of native forest trees.

THE MAIN COLLEGE BUILDING is a three-story brick structure, 130 by 140 feet, trimmed with gray sandstone. It contains twenty-two rooms, including recitation rooms, library and reading room, literary society halls, laboratories for botany, bacteriology, physics, and mineralogy, besides the offices of the President, the Commandant and the Secretary and Treasurer. Adjoining this building is Memorial Hall, the College chapel, which has a seating capacity of 1,000, and is used for religious services and as an assembly room.

THE CHEMICAL BUILDING is of brick, two stories high, 50 by 80 feet, roofed with slate and finished inside with southern pine.

THE MECHANICAL BUILDING, which is devoted to work in engineering and mechanic arts, is a substantial brick structure of liberal dimensions, containing about 30,000 square feet of floor space.

THE ELECTRICAL INSTRUMENT LABORATORY is a single story brick building, constructed of non-magnetic materials and designed especially for delicate electrical instruments.

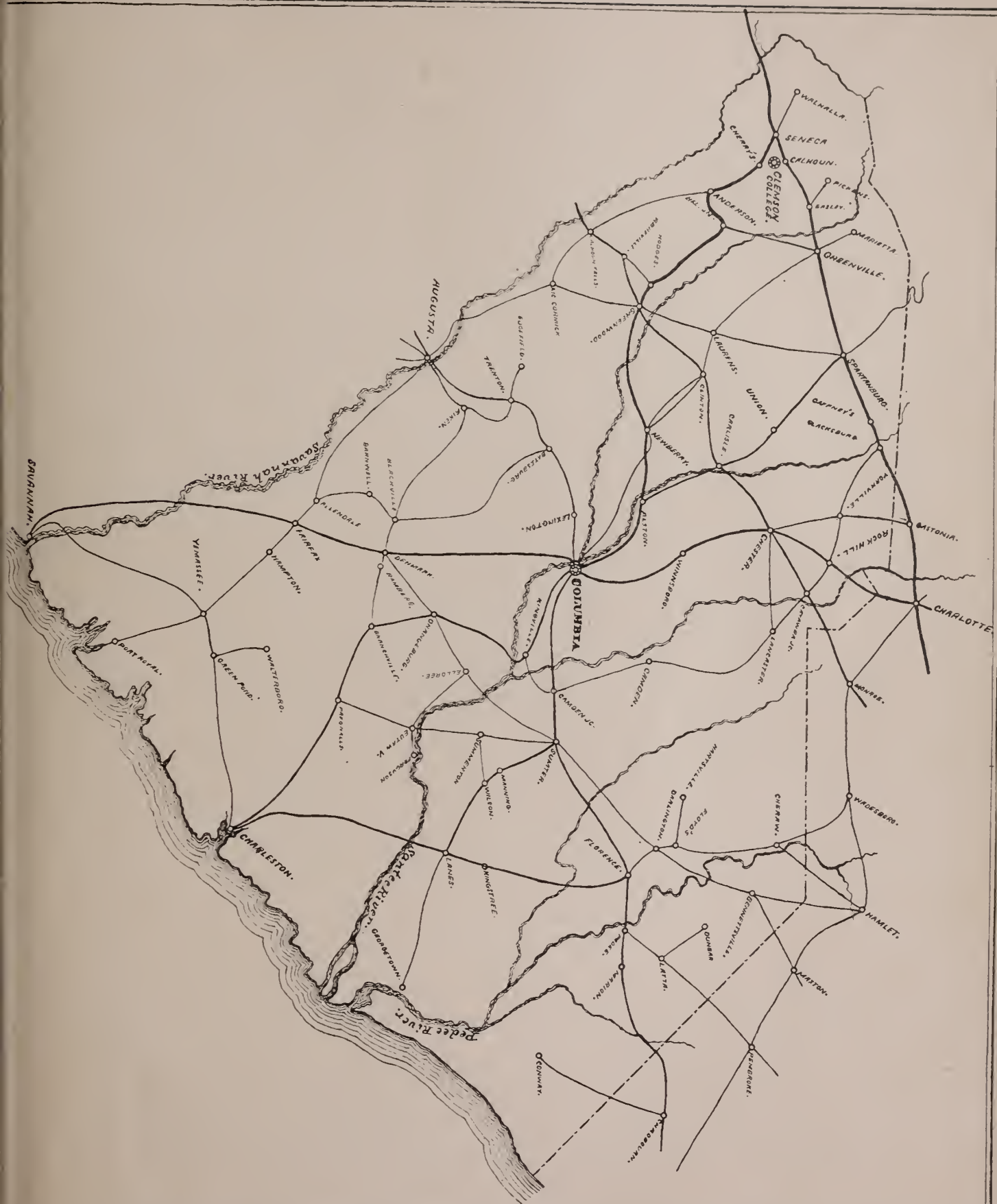
TEXTILE BUILDING.—A two-story brick building, illustrated on another page, is in course of erection, to be occupied by the Textile department.

THE HORTICULTURAL BUILDINGS consist of a spacious and well-equipped green house, a canning house, and a packing house with brick basement. A building is in course of erection to contain class rooms and laboratories for instruction in horticulture and entomology.

THE DAIRY BUILDING is a wooden structure of modern design, constructed especially to illustrate the most approved methods of dairy practice.

EXPERIMENT STATION OFFICES.—A wooden building containing offices, a library, and storage and seed rooms is provided for the use of the officers of the Experiment Station.

FARM BUILDINGS.—The College is provided with commodious barns and other farm buildings of modern design, which are described more fully in connection with the equipment for instruction in agriculture.



THE VETERINARY OPERATING HOUSE is a commodious frame building, containing stalls for animals under treatment, a pharmacy, a dissecting room, and a blacksmith shop.

THE CADET BARRACKS is a three-story brick building containing 148 rooms for students; and in addition to these rooms, it has a dining hall 134 by 44 feet, and a kitchen 50 by 37 feet. The building is heated by steam and lighted by electricity, and has an abundant supply of pure spring water.

The rooms in barracks are furnished with single width iron cots, mattresses, tables, chairs, wardrobes, buckets, pans, cups and mirrors. The dining hall is well supplied with table linen, silverware and china. The kitchen is equipped with all the modern appliances for culinary purposes.

The bath rooms and closets are located in brick buildings apart from the barracks, but connected with it by covered gangways.

THE HOSPITAL, located more than a quarter of a mile from the barracks, is a wooden building especially designed for the purpose. It is lighted by electricity and has a thorough sewerage system. The hospital is in the immediate charge of the College Surgeon, who is assisted by an experienced matron and a nurse, thus insuring the best personal attention to each patient.

THE CALHOUN MANSION, the former residence of John C. Calhoun, is kept in honor of his memory, in accordance with the provisions of Mr. Clemson's will.

RESIDENCES.—Nine two-story brick buildings, nine six-room cottages, and sixteen smaller houses furnish residences for professors and other employees.

Those members of the faculty who do not occupy residences are furnished lodgings at the College Hotel, a beautifully located building overlooking the campus.

THE LAUNDRY is a brick building specially constructed and fitted with the improved machinery of a modern steam laundry. It is operated exclusively for students.

Water Supply.

There are two sources from which water is obtained. The general supply is collected through iron pipes into a reservoir, from which it is pumped into a stand-pipe eighty feet high, whence it is distributed.

Drinking water is pumped from a bold spring, in a continuous stream, directly into the barracks. It is by this means furnished fresh, pure, and cold.

The waste water is used for flushing the sewer-pipes, which empty into the Seneca river, a half-mile away.

Tuition.

Free tuition will be given to the residents of South Carolina when the following certificate is properly signed and filed:

CERTIFICATE OF INABILITY TO PAY TUITION.
This is to Certify, <i>That I am unable to pay tuition for my</i> <i>in the Clemson Agricultural College</i> <i>for the session of 1898-99.</i>
<i>Father or Guardian.</i>
<i>I hereby certify that, to the best of my knowledge and belief, the</i> <i>above statement is true.</i>
<i>County Auditor.</i>

All other students pay a tuition fee of \$40.00 per session.
Blank certificates will be furnished upon application to the President.

Expenses.

The next session of the College will begin September 14th, 1898, and close June 14th, 1899. Expenses for this session of nine months will be as follows:

Matriculation Fee,	-	-	-	-	\$ 5 00
Medical Fee,	-	-	-	-	5 00
Uniform,	-	-	-	-	22 30
Board and Washing	-	-	-	-	67 50
Total for Free-tuition Students,	-				\$99 80
Tuition,	-	-	-	-	40 00
Total for Tuition-paying Students,	-				\$139 80

The session is divided into two terms of two quarters each, beginning as follows:

September 14th, 1898.
November 21st, 1898.
January 28th, 1899.
April 6th, 1899.

Payments must be made promptly at the beginning of each quar-

ter. On the day of entrance each student must make the following payments:

Matriculation Fee,	-	-	-	-	\$ 5 00
Medical Fee,	-	-	-	-	5 00
Uniform,	-	-	-	-	22 30
Board and Washing for one quarter,	-	-	-	-	16 88
Total for Free-tuition Students,	-	-	-	-	\$49 18
Tuition,	-	-	-	-	10 00
Total for Tuition-paying Students,	-	-	-	-	\$59 18

At the beginning of each succeeding quarter the payments are:

For Free-tuition Students,	-	-	-	\$16 88
For Tuition-paying Students,	-	-	-	26 88

Price of uniforms subject to fluctuations of market.

To the above must be added the cost of books and stationery, which may be obtained at the Cadet Exchange at wholesale prices; also \$1.50 for diploma, payable on graduation.

Remittances should be made in cash, money order, or New York Exchange, but *not by local checks*, to P. H. E. SLOAN, Treasurer, Clemson College, S. C.

A deduction will be made for board and washing when the student is absent one month or more.

Next Session.

The next annual session will begin September 14th, 1898, and will continue without vacation till June 14th, 1899.

It is of great importance that students be present on the day of opening.

Requirements.

Each candidate for admission must be at least fifteen years of age, except where two brothers apply, one being over fifteen and the other not under fourteen.

Matriculation is equivalent to a pledge to conform to the rules and regulations of the College.

Certificates of good moral character are required of all candidates for admission not known to members of the faculty; and, if the candidate comes from another college, this certificate must show that he was honorably discharged.

For admission into the freshman class thorough proficiency is required in arithmetic, elementary algebra, English grammar, geography, and history of the United States. A preparatory course is provided for students not sufficiently advanced for the College classes. The text-books recommended to those preparing to enter the freshman class are Wentworth's Grammar-School Arithmetic,

Wentworth's Elements of Algebra (used in the preparatory course), Whitney-Lockwood English Grammar, Appleton's Higher Geography, Eggleston's History of the United States and Its People.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption, or other contagious or communicable diseases, or permanent disability for manual labor or military duty.

All students are required to pursue regular courses, except when granted special permission by the faculty to take irregular courses.

Students in any class who fail to pass on more than one subject will not be promoted, and no student will be promoted to the senior class till all deficiencies are made up.

Students are required to make up all class work from which they have been absent for any cause except military duty.

All regular students are required to board in the institution except those who live with their parents near enough to attend from their homes.

The government is military, and each student is required to purchase the prescribed uniform. Students may provide themselves with such work clothes as they desire.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow, and two pillow cases. Beds are single width.

Organization.

For purposes of instruction the College is organized into five departments, as follows:

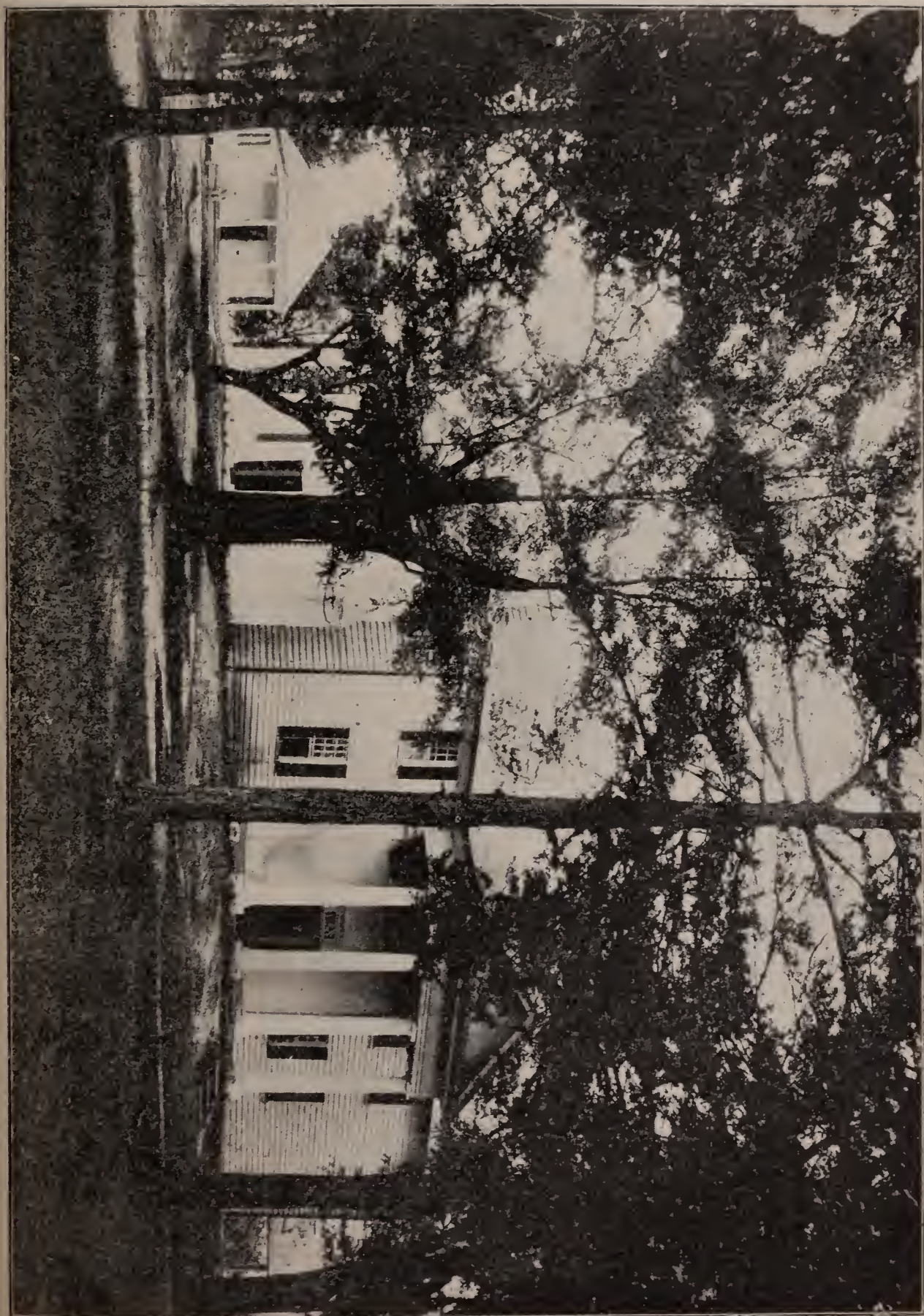
1. Agricultural Department
2. Mechanical Department
3. Department of Chemistry and Natural Science
4. Literary Department
5. Military Department

Each department is presided over by a professor designated by the Board of Trustees as Head of Department, who in addition to teaching, exercises a general supervision over the work of the department. The divisions of each department are in the immediate charge of special instructors.

The Agricultural department comprises the following divisions: General Agriculture, including Animal Husbandry; Horticulture; Entomology; Botany; Dairying; Veterinary Science; Poultry Raising.

The Mechanical department comprises the divisions of Applied Mechanics, including Experimental Engineering; Physics; Electrical Engineering; Drawing and Designing; Forge and Foundry; Machine Shop; Wood Work.

The department of Chemistry and Natural Science includes Chemistry, general, industrial, agricultural and analytical; Geology and Mineralogy.





The Literary department comprises the courses in pure Mathematics, Civil Engineering, English and History.

The Military department comprises theoretical and practical instruction in Military Science and Tactics.

There are two full courses of study—agricultural and mechanical. All regular students in the freshman class pursue the same studies. At the beginning of the sophomore year they choose either of these courses, and upon its completion are granted diplomas conferring the degree of Bachelor of Science. At the beginning of the junior year students pursuing the mechanical course are also allowed to choose between electrical engineering and civil engineering.

Irregular Students.

Students are earnestly advised to pursue regular courses; but those who for satisfactory reasons are unable to do so, may upon the approval of the faculty, pursue special studies. No student whose time is not fully occupied will be permitted to remain at the College. Diplomas are not issued to irregular students.

Special Students.

Graduates of this and other institutions or other mature young men of earnest purposes, who desire to pursue special lines of work will be given every opportunity that the College affords, upon satisfying the faculty that they are qualified to undertake such courses to advantage. Students thus admitted are expected to apply themselves assiduously.

Reports.

Monthly reports are furnished to parents and guardians, giving the standing of students in all studies and in discipline. Reports are also issued at the end of each term, showing the grades, based upon class work and examinations, in all studies. Parents will be advised to withdraw students who habitually shirk duties.

Degrees.

Students who satisfactorily complete either of the four-years courses will receive the degree of Bachelor of Science.

Experiment Station.

The State Experiment Station occupies a portion of the College farm, and affords valuable opportunities for instruction in the various divisions of the Agricultural department.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investiga-

tion being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom. The organization and work of the Experiment Station are described at the end of this catalogue.

Farmers' Institutes.

During the past year Farmers' Institutes have been held under the management of the College in many counties of the State. The President and Professors of Agriculture, Chemistry, Horticulture, Dairying, Veterinary Science, Botany, and other members of the faculty have taken part in these institutes. The purpose has been to bring practical information to the farmer, and to give him the results of scientific investigation in the interest of Agriculture. The success thus far attained is most encouraging, and leads to the hope that these institutes may become a permanent feature in the work of the College.

They will be continued during the coming vacation. A special institute of ten days duration will also be held at the College during the month of August, in which, besides the College faculty, a number of prominent speakers from other states are expected to participate.

Farmers wishing an institute held in their county or community should write to the President of the College.

Student Labor.

A certain amount of educational labor is required of all students in connection with the prescribed courses of instruction. In addition to this considerable manual labor is necessary to carry on the agricultural and mechanical departments of the College. Students who desire it are employed in this work, when practicable, and are paid for it at the rate of eight cents an hour; but no student is allowed to undertake work that interferes with his College course. This labor serves a two-fold purpose: it helps students that are in need of money to pay their College expenses, and most of it puts into practice the teaching of the class room. No student should come to the College, however, expecting to defray all his expenses in this way. The demand for such labor always exceed the supply, and the College assumes no obligation to furnish students with employment for wages.

Religious Services.

The regular Sunday morning services in Memorial Hall during the past year have been conducted by Rev. A. T. Dunlap (Methodist), Rev. R. W. Sanders, D. D., (Baptist), Rev. R. P. Pell



PRESIDENT'S RESIDENCE.



(Presbyterian), and Rev. O. T. Porcher (Episcopalian). All students are required to attend these services. In addition, a Sunday School, at which attendance is voluntary, meets every Sunday.

Chapel services are conducted every morning by the President assisted by other members of the faculty.

Young Men's Christian Association.

This is a voluntary organization of the students, and is entirely under their management. The objects of the association are to promote Christian fellowship among its members and aggressive Christian work among the students. The meetings are held in Memorial Hall every Sunday evening. The membership is of two classes—active and associate. A member in good standing of any evangelical church may become an active member of the association, and any young man of good moral character may become an associate member. The faculty are in hearty sympathy with the work of the association, and render cheerful service when requested to do so. Parents and guardians are advised to encourage the students under their care to join the association as soon as they reach the College.

Library.

In the main building are a series of rooms specially constructed for the use of the Library. About 3,000 volumes of standard English literature, history, biography, general science, etc., and about 600 volumes of government publications are now on the shelves. The number of books is being added to each year. They have been recently classified and arranged, and excellent opportunity is now offered students for general and supplementary reading.

In recent purchases for the library special efforts have been made to procure all available books on South Carolina history and literature.

The following donations have been made to the library during the past year :

Two copies of "Fitzhugh St. Clair, the South Carolina Rebel Boy," by Mrs. Sallie F. Chapin; presented anonymously.

"The War Between the States," by Alexander H. Stephens; presented by Dr. P. H. E. Sloan.

A large number of valuable government reports presented by Hon. D. Wyatt Aiken.

Reading Room.

Connected with the Library is the students' reading room, supplied with the leading magazines and daily papers, and most of the county papers of the State.

The following papers are kindly contributed to the reading room by the publishers :

Anderson Intelligencer,
Athens Daily Banner,
Baptist Courier,
Barnwell People,
Barnwell Sentinel,
Camden Chronicle,
Chester Reporter,
Christian Neighbor,
County Record,
Edgefield Chronicle,
Edgefield Monitor,

Greenwood Journal,
Independent Republic,
Lancaster Enterprise,
Lancaster Ledger,
Lancaster Review,
Laurens Advertiser,
Laurens Herald,
Lexington Dispatch,
Lutheran Visitor,
Manning Times,
Marion Star,

Newberry Herald and News,
Palmetto Post,
People's Advocate,
Pickens Journal,
Pickens Sentinel,
Press and Standard,
South Carolina Baptist,
Southern Presbyterian,
Union Times,
Watchman and Southron.

Literary Societies.

Three literary societies, the Calhoun, the Palmetto, and the Columbian, furnish a valuable supplement to the work of the College. These societies afford facilities for practice in debate, oratory, declamation, and essay writing, and their members acquire valuable knowledge of parliamentary law and usage. The meetings are held weekly on Friday evenings. Public celebrations and contests are also held at intervals during the year, at which there are debates, orations and declamations by the students.

The societies occupy halls in the main College building which are furnished with carpets and opera chairs, and are maintained entirely by the students. A small fee is charged for initiation, and there are also monthly dues of a few cents to meet running expenses. The total membership usually comprises about nine-tenths of the registered attendance at the College. All students are advised to join one of these societies.

THE CLEMSON COLLEGE CHRONICLE, a magazine designed to encourage literary work among the students, is published monthly during the session by the literary societies.

Scientific Association.

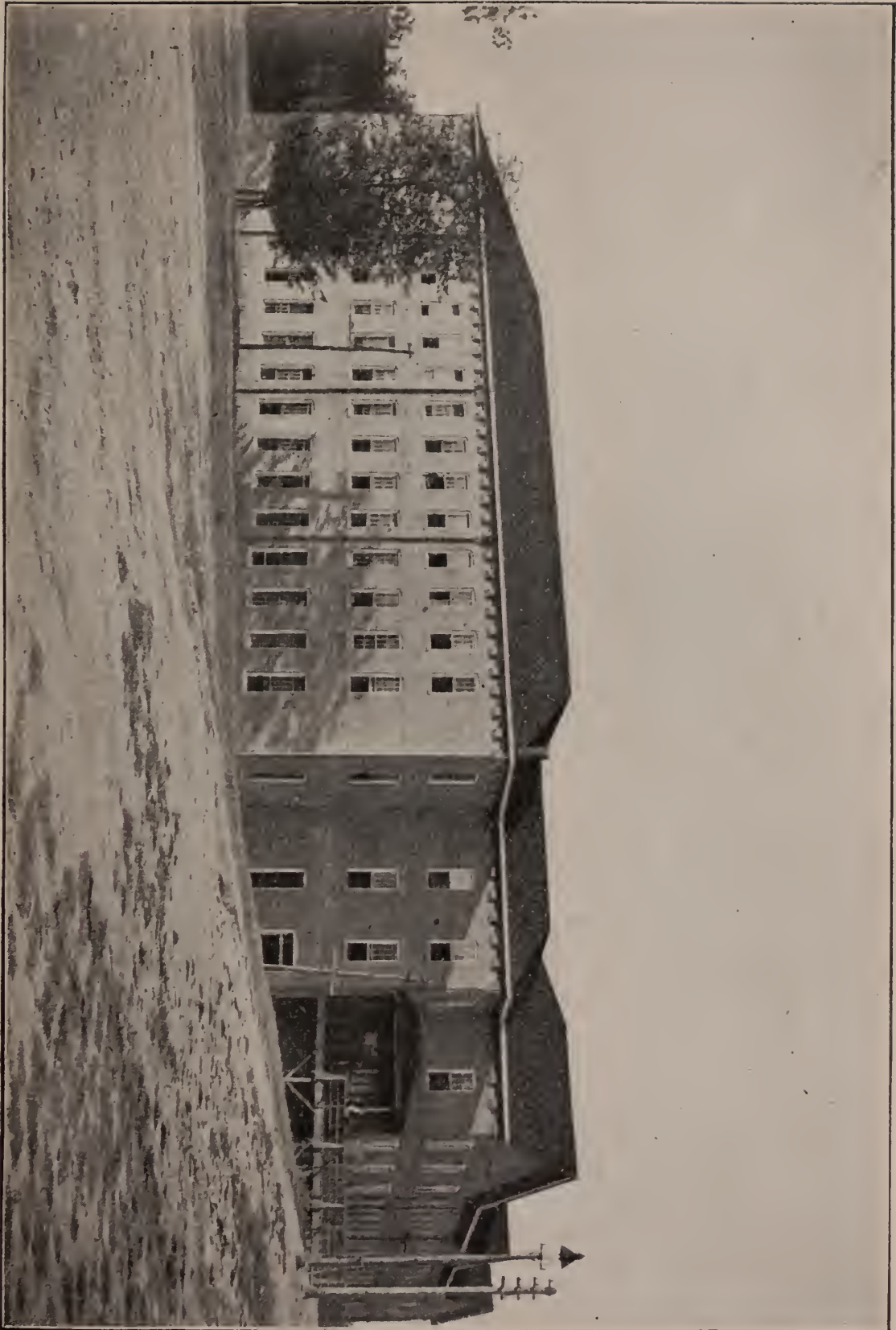
A Scientific Association has been organized for the purpose of promoting knowledge of the progress of the natural sciences, theoretical and applied. Public meetings are held every two months, at which subjects of general scientific interest are discussed by members of the faculty and advanced students of the College. These meetings are largely attended by the students.

Band.

In connection with the military organization is a regimental band of twelve pieces, supplied by the College with first class instruments.

Cadet Exchange.

A Cadet Exchange has been established where students may purchase at wholesale prices necessary articles, such as books, stationery, collars, cuffs, underwear, etc.



BARRACKS.

CURRICULUM.

Agricultural Course.
Freshman Class.

THEORETICAL.	Hours per week.		PRACTICAL.	Hours per week.	
	1st Term	2d Term		1st Term	2d Term
Mathematics.....	5	5	Wood Work.....	4	4
English.....	5	5	Mechanical Drawing...	2	2
History.....	5	1	Free Hand Drawing....	3	3
Agriculture.....	0	4	Forge Work.....	4	4
			Drill.....	2	2

Sophomore Class.

THEORETICAL.			PRACTICAL.		
Mathematics.....	5	5	Chemical Laboratory ..	4	4
English.....	3	3	Surveying Field Work.	2	0
Chemistry.....	3	3	Agriculture and Stock		
Agriculture and Stock			Breeding.....	2	2
Breeding.....	2	0	Horticulture.....	2	2
Horticulture.....	2	0	Dairying.....	2	0
Botany.....	0	2	Entomology }	1	3
Dairying.....	0	1	Botany }		
Entomology.....	0	1	Mineralogy.....	0	2
			Drill.....	2	2

Junior Class.

THEORETICAL.			PRACTICAL.		
English.....	2	2	Chemical Laboratory ..	6	6
History.....	4	0	Agriculture and Stock		
Chemistry.....	2	2	Breeding.....	2	2
Military Science.....	1	1	Horticulture.....	2	2
Dairying.....	2	0	Dairying.....	2	0
Botany.....	0	2	Entomology }	1	3
Horticulture.....	0	2	Botany }		
Entomology.....	0	2	Drill.....	2	2
Veterinary Science.....	2	4			
Agriculture.....	2	0			

Senior Class.

THEORETICAL.			PRACTICAL.		
English.....	2	2	Chemical Laboratory ..	6	6
History.....	2	2	Veterinary Science.....	3	3
Chemistry.....	2	2	Dairying.....	2	0
Geology.....	3	3	Agriculture.....	0	2
Agriculture.....	2	2	Botany.....	2	0
Veterinary Science.....	1	1	Horticulture.....	0	2
Botany.....	2	0	Drill.....	2	2
Entomology.....	0	2			
Military Science.....	1	1			

Course in Engineering and Mechanic Arts.

Freshman Class.

THEORETICAL.	Hours per week.		PRACTICAL.	Hours per week.	
	1st Term	2d Term		1st Term	2d Term
Mathematics.....	5	5	Wood Work.....	4	4
English.....	5	5	Mechanical Drawing...	2	2
History.....	5	1	Free Hand Drawing...	3	3
Agriculture.....	0	4	Forge Work	4	4
			Drill.....	2	2

Sophomore Class.

THEORETICAL.			PRACTICAL.		
Mathematics.....	5	5	Wood Work.....	2	2
English.....	3	3	Mechanical Drawing...	2	2
Descriptive Geometry..	2	0	Foundry.....	5	5
Chemistry.....	3	3*	Chemical Latoratory ..	4	4†
Natural Philosophy....	0	2	Drill.....	2	2
History ...	2	2			

*SECOND TERM—Chemistry first half, Descriptive Geometry second half.

†SECOND TERM—Chemical Laboratory first half, Mechanical Drawing second half.

Junior Class.

THEORETICAL.			PRACTICAL.		
Mathematics.....	5	5	Machine Shop.....	5	4
Physics.....	2	2	Mechanical Drawing	} 4	3
Electrical Engineering	} 3	3	and Designing.....		
Or Civil Engineering			Electrical Laboratory, or	} 4	4
Mechanics.....	2	2	Civil Engineering		
English.....	2	2	Field Work.....	} 0	2
Military Science.....	1	1	Mechanical Laboratory		
			Drill.....	2	2

Senior Class.

THEORETICAL.			PRACTICAL.		
Mechanical Engineering	2	2	Shop Work.....	5	5
Electrical Engineering	} 5	5	Mechanical Drawing...	2	2
Or Civil Engineering..			Electrical Laboratory, or	} 4	4
Applied Mechanics....	3	3	Civil Engineering		
History.....	2	2	Field Work.....	} 2	2
English.....	2	2	Mechanical Laboratory		
Military Science.....	1	1	Drill.....	2	2



HOTEL.



STUDENT'S DINING HALL.





COURSES AND EQUIPMENT.

General Agriculture.

PROFESSOR NEWMAN.

ASSISTANT PROFESSOR CONNER.

This study is pursued in all of the classes, commencing with the elementary principles in the freshman year. During this year the instruction is confined to the application of principles and practice which do not require a knowledge of the sciences related to agriculture.

As the student progresses in the study of the natural sciences, the application of these sciences is taught in their relation to the art of agriculture, special stress being placed upon the protection, improvement, fertilization, and all manipulations of the soil in the preparation for planting and in the cultivation of crops.

The cultivation of each important crop is discussed in the concrete. Special attention is bestowed upon the grasses and their cultivation. In the higher classes the employment and management of labor, farm equipment, and farm management are discussed. All instruction is given by lectures, the subjects being illustrated as far as possible by practical exercises.

Reference books: Voorhees' First Principles of Agriculture, Storer's Agriculture, Experiment Station Bulletins.

Equipment.

The College has a large storage barn provided with silos, a cow barn furnished with various forms of stanchions, a mule barn provided with the most improved forms of stalls and feed racks, implement and wagon sheds for storage of tools, etc., compost building for making compost in large quantities, and two large cribs for storage of corn.

Among agricultural machinery and implements may be mentioned the following: self binder, corn harvester, Deering ball bearing mower, Osborne mower, self dumping rake, check row corn planter, Buckeye cultivator, B. F. Avery cultivator, Tower cultivator, disc cultivator, springtoothed harrow, smoothing harrows, various forms of pulverizers, manure spreading machines, fertilizer and grain drill, various forms of small fertilizer drills, Planet Jr. drill, two Planet Jr. plows, scientific mill, stone grist mill, Tornado ensilage cutter, small thresher, hand gin, rock crusher, road machine, three terrace levels, and a 10 K. W. electric motor.

Horticulture.

ASSISTANT PROFESSOR DU PRE.

MR. WALKER.

The course in horticulture consists of horticulture proper, home

gardening, truck farming, pomology, viticulture, canning, and experiment work.

Instruction is given by lectures, covering the subject of horticulture in its most comprehensive sense; and embracing all sub-divisions in every detail. The instruction is continued through the entire course and is illustrated by practical exercises in the garden, orchard, vineyard and greenhouse.

In the practical work, the student is required to labor, and is thereby taught by actual experience the use of tools, the proper mode of preparing, fertilizing and cultivating the soil; shipping, storing, and canning vegetables and fruits; training and pruning vines and trees; propagating plants by seeds, grafts, buds, layers, leaves, and divisions. Instruction is also given in the making and use of hot-beds, cold-frames, mulching, etc., together with the art of forcing, crossing, and hybridizing, and the care of plants in the greenhouse.

Equipment.

The equipment for practical instruction in horticulture consists of the following: canning outfit complete; greenhouse, 21 by 140 feet, heated by hot water; experimental garden, about 5 acres; orchard, vineyard, and plats of small fruits, about 50 acres; truck farm, about 25 acres; and a small nursery.

Entomology.

MR. WALKER, INSTRUCTOR IN CHARGE.

In this division the aim of the instruction is to give the student a working knowledge in the science for practical purposes, and to lay the foundation for further study, in case the student should desire to continue the subject.

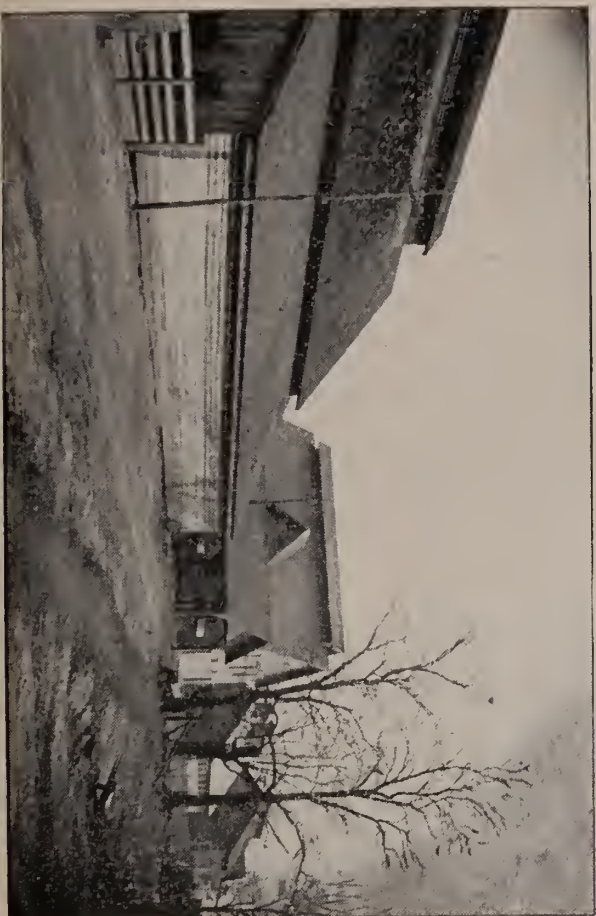
The class work consists of lectures and laboratory study. The student is made familiar with the technical terms used in describing insects, with the characteristics of the several orders, sub-orders, and principal families; and with the use of keys for the identification of species. Special attention is given throughout to species of economic importance, both noxious and beneficial, together with the methods of combatting the former intelligently.

The student is impressed from the beginning with the importance of studying insects themselves, and of acquiring his knowledge first-hand as far as practicable. With this end in view, the lectures are constantly followed by laboratory study, which includes a careful examination of typical insects from the more important groups; drawings; descriptions; and the identification as far as families, and mounting for preservation of insects collected in frequent field excursions.

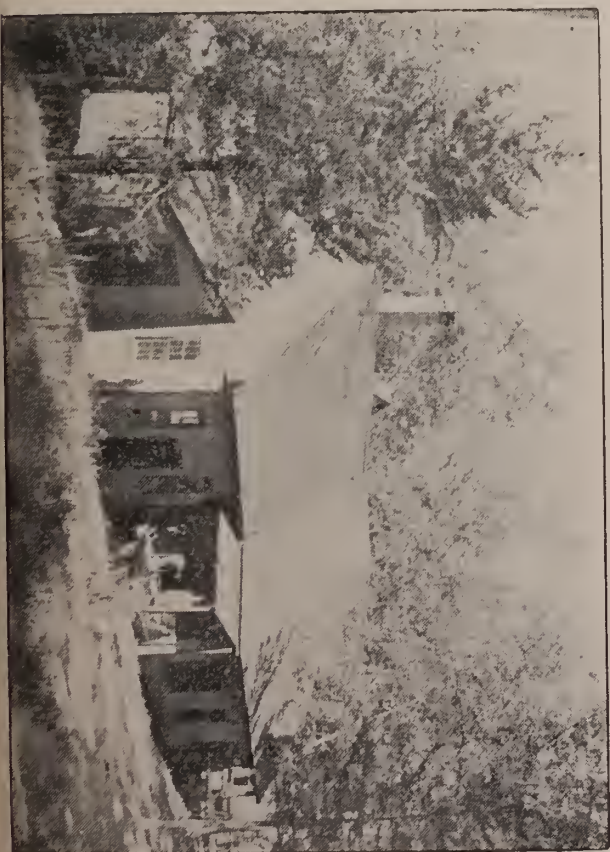
Comstock's Manual for the Study of Insects is used as a guide.



EXPERIMENT STATION OFFICE.



HERD OF CATTLE.



Other standard works on Entomology are at hand for further reference.

Equipment.

A two-story framed building is in course of erection to provide class rooms and laboratories for instruction in Horticulture and Entomology. The entire upper story of this building is to be fitted up as a museum to illustrate these subjects.

Botany.

MR. ANDERSON, INSTRUCTOR IN CHARGE.

SOPHOMORE CLASS.

SECOND TERM.—General Course.—During the second term the agricultural students are given a general course in botany. The student becomes acquainted with the use of the simple microscope in examining the organs of common flowering plants. Much time is devoted to the identification of common wild and cultivated plants. Special attention is given to the study of the grasses and clovers. The text-book used is Wood's Botanist and Florist.

JUNIOR CLASS.

FIRST TERM.—Plant Histology and Anatomy.—Work with the compound microscope is begun in the junior class in the study of plant histology and anatomy. The student becomes acquainted with the use of the compound microscope in studying the minute structure of plants, seeds, and plant tissues. A microscopic examination is made of a few plant products, as starch, protein, etc.

SECOND TERM.—Physiology of Plants.—During the second term a short course in the physiology of plants is given by means of lectures and experiments in the field and laboratory. Practical experiments illustrating the principals of plant life and growth are carried on by the students and instructor.

SENIOR CLASS.

FIRST TERM.—Bacteriology.—A short course in bacteriology is given by lectures and laboratory work. The students and instructor prepare the different culture media used in isolating a few of the common bacteria of the soil, air and water. Only the non-pathogenic and beneficial forms are studied.

SECOND TERM.—Cryptogamic Botany.—During the second term a short course in cryptogamic botany is given. Special attention is given to those fungi that produce diseases of the common economic plants.

Equipment.

One of the rooms in the main College building has been fitted up specially for botanical instruction, with cases, laboratory tables, and gas and water connections.

The laboratory is equipped with 25 simple microscopes and 16 compound microscopes, as well as with the necessary chemicals, reagents and glassware. It is also

supplied with a few of the most important pieces of bacteriological apparatus—hot air oven, steam sterilizer, hot water funnel, petri dishes, test tubes, flasks, etc.

A collection of the flora of the State has been begun. These plants, as well as the plants received through donations and exchanges, are properly mounted and placed in the College herbarium. The herbarium contains at present about 3,000 specimens of fungi, mosses, ferns, and flowering plants, all of which are accessible to students and others. A collection of seeds has also been begun.

The College is always anxious to receive specimens of plants, seeds, and plant products of all kinds for instruction as well as for a permanent exhibit.

Dairying.

MR. HART, INSTRUCTOR IN CHARGE.

Students who take the agricultural course receive instruction in dairying. In the dairy building, which is equipped with apparatus for testing milk, separating, butter making, cheese making, etc., practical instruction is given and opportunity afforded students of learning the various operations carried on in a well conducted private dairy, creamery, or cheese factory. Wing's Milk and its Products is used as a text-book.

Instruction is also given in the breeding, feeding and handling of dairy cattle, the herd belonging to the College being used for the purpose of illustration.

Equipment.

The commodious dairy building has an independent steam plant and water works, and is supplied with everything needed for making butter and cheese on a factory and private dairy scale, including the leading makes of cream separators, churns, butter workers, and milk testers. Students are thoroughly drilled in the use of this apparatus.

Veterinary Science.

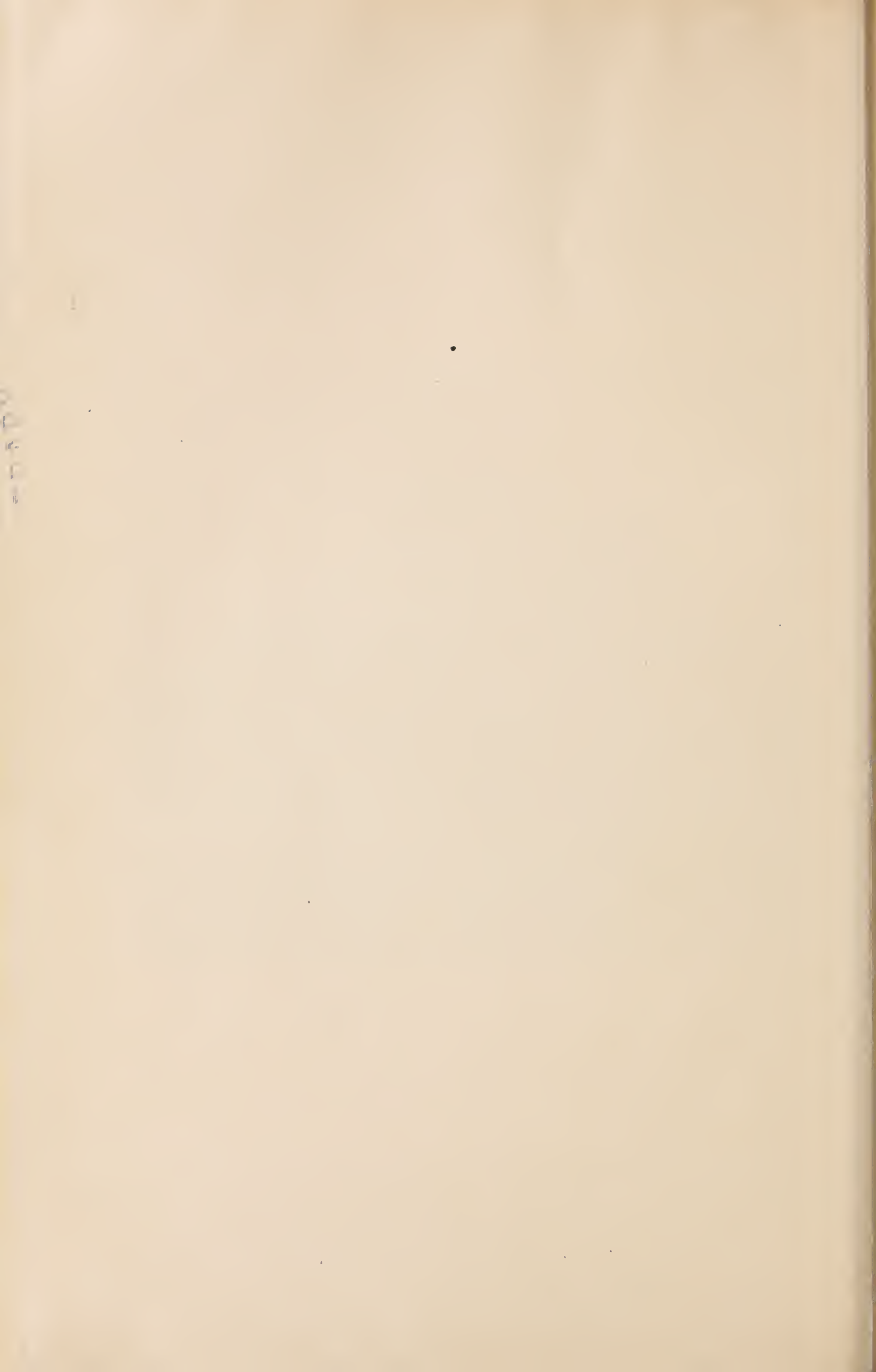
DR. WYMAN, INSTRUCTOR IN CHARGE.

The aim of this division is to acquaint the agricultural student with the principles of veterinary surgery and medicine. Since it is of the greatest importance to make the course as practical as possible, the time being too limited for a thorough education in veterinary science, a free clinic is held once a week for a whole afternoon. To this clinic a large number of sick and lame animals are brought. The student thus personally observes the various diseases and is taught in a practical manner the putting up of medicines and their administration. All students are required to operate and to prescribe.

The course begins with the study of anatomy, pathology, materia medica, and obstetrics, to an extent compatible with the educated agriculturist. The principles and practice of veterinary surgery are given careful attention, especially lameness and examination of animals for soundness and for purchase.



CHEMICAL LABORATORY.



Lectures are delivered on veterinary medicine, dealing with the most important diseases of the various domestic animals. The contagious diseases, their nature, causes, symptoms, treatment and prevention are thoroughly discussed. The free clinics serve to demonstrate the lectures.

Equipment.

The clinics are conducted in a commodious operating house erected for that purpose. This building contains a well equipped blacksmith shop where horses and mules are shod for the instruction of students. A pharmacy, containing all the drugs and preparations used in veterinary practice, is connected with the operating house. The class room is furnished with models and charts which are employed during the lectures to demonstrate points of special importance.

A very complete laboratory for microscopic work, histology, pathology and bacteriology, is open to postgraduate students.

Animal Husbandry.

ASSISTANT PROFESSOR CONNER.

SOPHOMORE CLASS.

Stock Breeding.—A careful study of the different types of domestic animals is pursued, and the student is thoroughly drilled in the principles and methods of successful breeding, heredity, atavism, variation, selection, fecundity, influence of environment, in-breeding, cross-breeding, grading, influence of previous impregnation, controlling of sex, etc. The animals in the farm herd are used for illustration.

JUNIOR CLASS.

Breeds of Live Stock.—The different breeds of horses, cattle, sheep and swine are considered, and those best adapted to the South are discussed at length. The College farm has a number of breeds of domestic animals which serve to illustrate the subject.

As a supplement to this work, the student is drilled in the use of the score-card which fixes the different types and breeds firmly in his mind.

SENIOR CLASS.

Stock Feeding.—This course includes the following subjects: laws of animal nutrition; composition of the animal body; fodders as a source of nutrients; digestion, resorption, circulation, respiration, and excretion; formation of muscle, flesh and fat; composition and digestibility of feeding stuffs, and their preparation and use; feeding for fat, for milk, for wool, for work and for growth.

Special attention is given to the feeding of mules, and the available feed-stuffs of the South are discussed at length.

Poultry Raising.

The work of this division will be directed in such lines as will furnish practical, useful information to the people, and thereby stimulate interest in and attention to this important source of family supply and revenue. Under the auspices of the Experiment Station experiments will be conducted in rearing the various breeds of poultry and the English ring-necked and Mongolian pheasants.

The work and equipment in this division will serve as valuable object lessons to students of the College, and will be used to illustrate the lessons of the class room.

Equipment.

The plant of this important division is in process of erection. There are 36 pens 20 by 32 feet, and in each a house 6 by 8 feet. For every four pens there is a run 80 by 150 feet, all enclosed with poultry cabled wire.

Chemistry.

PROFESSOR HARDIN.

ASSISTANT PROFESSOR BRACKETT.

MR. SHIVER.

SOPHOMORE CLASS.

BOTH TERMS.—General Chemistry.—Inorganic chemistry and the leading facts and principles of organic chemistry. Text-book, Roscoe's Elementary Chemistry. Laboratory.—Introductory work and qualitative analysis. Text-book, Jones' Junior course of Practical Chemistry.

JUNIOR CLASS.

BOTH TERMS.—Industrial and Analytical Chemistry.—Air, water, food, clothing, building materials, and other articles used in every day life. The metallurgy of iron, copper, lead, tin, zinc, silver, and gold. Laboratory.—Qualitative and quantitative analysis and assaying. Text-books, Jones' Junior Course in Practical Chemistry, Fresenius' Qualitative and Quantitative Analysis.

SENIOR CLASS.

BOTH TERMS.—Agricultural and Analytical Chemistry.—The composition of plants, the sources of plant food, the composition of soils, the improvement of soils by chemical means, the composition and manufacture of fertilizers, the composition of feeding stuffs and of dairy products. Text-book, Johnston's Elements of Agricultural Chemistry, edited by Cameron and Aikman. Laboratory.—Quantitative analysis of fertilizers, soils, ashes of plants, water, cattle foods and dairy products. Text-books, Bulletins of U. S. Depart-

ENGINEERING AND MECHANIC ARTS.



18-0-00

ment of Agriculture, containing methods of analysis adopted by the Association of Official Agricultural Chemists.

Equipment.

THE CHEMICAL LABORATORY is a two-story brick building, fifty by eighty feet, covered with slate, and finished inside with Southern pine.

On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, and are supplied with all necessary chemical and optical apparatus. Of the other rooms on this floor, one is a balance room for students, one an office, and the third is fitted up as a laboratory for advanced students. The basement is used for assaying and for storage.

On the second floor there are five rooms. The qualitative laboratory, which is the largest of these, is thirty-six by forty-eight feet, with a pitch of seventeen feet in the clear. It will accommodate sixty students at a time, and is provided with hoods for carrying off noxious gases, convenient working tables, water, gas, and all necessary appliances for experimental work. The other rooms on this floor are the lecture room, professor's laboratory, an office, and a room for gas analysis.

The Chemical Library is supplied with Wagner's Chemical Technology, Payne's Industrial Chemistry, Lunge's Sulphuric Acid, Thorpe's Dictionary of Applied Chemistry, Rickett's Notes on Assaying, Brown's Assaying, Phillips' Metallurgy, Deherain's Treatise on Agricultural Chemistry, Storer's Agriculture in some of its Relations with Chemistry, Wiley's Agricultural Analysis, and with other valuable works on theoretical and applied chemistry, as well as with American and foreign journals.

Geology and Mineralogy.

PROFESSOR LEWIS.

SOPHOMORE CLASS.

SECOND TERM—Mineralogy.—Elements of crystallography; laboratory study of crystal forms by the use of models and natural crystals; construction of crystal drawings; chemical and physical properties of minerals; chemical and physical tests of known minerals; determination of unknown specimens. Special attention is given to the useful minerals and those forming the chief constituents of rocks.

SENIOR CLASS.

BOTH TERMS.—General Geology.—Dynamical, structural and historical geology, with special reference to the development of the North American continent. The influences of geologic phenomena on man are carefully pointed out, particularly in the consideration of soils, the agents of erosion, transportation and deposit, and resultant topographic forms, and the accumulation of valuable ores and minerals.

Equipment.

The teaching collections contain about 1,000 labeled specimens of typical rocks, minerals and fossils, besides material for laboratory study. The collections are arranged in systematic order in glass cases, and are always available to students. The class room is also furnished with large physical wall maps of all the continents and an 18-inch terrestrial globe.

For practical work in mineralogy the laboratory is supplied with water and gas and complete apparatus and reagents for the determination of minerals by means of their physical and chemical properties.

Standard works on geology and mineralogy are kept in the laboratory for reference.

The College is a stated repository for all publications of the United States Geological Survey, and many valuable maps and reports have been received from this source, including all geologic folios that have been issued and a select series of topographic maps for instruction in physiography. A number of valuable maps are also supplied by the United States Coast and Geodetic Survey.

State Specimens Wanted.—The College is anxious to procure specimens of all rocks, ores, minerals, and other natural products of the State, both for the instruction of students in the State's resources and as a permanent exhibit for all who may be interested in their development. The professor in charge will be glad to correspond with any one who is willing to furnish such specimens, and to give information, when desired, as to their nature and value.

Applied Mechanics.

PROFESSOR WORTHINGTON.

JUNIOR CLASS.

BOTH TERMS.—Elements of statics, dynamics, hydrostatics, and hydrodynamics. Text-book, De Volson Wood's Principles of Elementary Mechanics.

SENIOR CLASS.

BOTH TERMS.—Theory of resistance and elasticity of materials, strength of pipes, cylinders, and riveted joints; simple, cantilever, restricted, and continuous beams; compression of columns; torsion of shafts; combined stresses. Text-book, Merriman's Mechanics of Materials.

Physics.

MR. POATS, INSTRUCTOR IN CHARGE.

SOPHOMORE CLASS.

SECOND TERM.—Properties of matter, velocity, acceleration, force, mass, work, etc.

JUNIOR CLASS.

BOTH TERMS.—Sound, heat and light.

Text-books, Gage's Principles of Physics and Deschanel's Natural Philosophy.

Equipment.

The physical lecture-room and laboratory is located in the main College building, being 33 by 60 feet, and is well equipped for lecture and experimental work in mechanics of solids, liquids and gases, and in acoustics, optics and heat.

Mechanical Laboratory.

MR. BARNES, INSTRUCTOR IN CHARGE.

This course is designed to teach the applications of the principles of mechanical engineering, and to familiarize the student with



CLASS IN ENGINE TESTING.

the instruments of this profession. It affords opportunity for illustrating the applications of science to industrial uses, and seeks to investigate the problems likely to occur in practice.

JUNIOR CLASS.

SECOND TERM.—Lectures on the fundamental principles of mechanical and experimental engineering; relation of theory to practice; use of engineering instruments; methods of testing building materials. Laboratory Practice.—Study, use, and calibration of steam gauges, pumps, injectors, steam engine indicators, and planimeters; measurement of water power and steam power; tests of building materials, as iron, brick, cement, wooden beams, etc.; use of water motors, hydraulic rams, steam engines, boilers and pumps. Text-book, Carpenter's Experimental Engineering.

SENIOR CLASS.

BOTH TERMS.—Lectures on the theory and use of steam engines, steam and coal calorimeters, oil and gas engines; methods used in testing power plants. Laboratory Practice.—Use of steam engine indicators; computation of power from diagrams; efficiency tests of steam pumps, steam engines, hot air engines, and compressed air motors; tests of lubricants, fuels, and products of combustion; solving of practical engineering problems. Text-books, Carpenter's Experimental Engineering, Thurston's Steam Engine.

GRADUATE COURSE.

Lectures and Laboratory Work.—Test of College power plant, including pumps, engine, boilers, and generators; designing of shop and laboratory equipment, with specifications and forms of contracts; installing and testing of apparatus; study of transmission of power; original research; commercial problems.

Equipment.

This laboratory occupies a room 41 by 45 feet, and contains the following equipment: For steam engineering: 15 horse-power horizontal, locomotive type boiler; 6 horse-power vertical boiler; Erie 6 horse-power plain slide-valve steam engine; 2-in. x3in. x4in. duplex steam pump; set of steam gauge testing apparatus; Carpenter's separating steam calorimeter; two throttling steam calorimeters; five steam engine indicators of various makes; two standard injectors. For hydraulic engineering: two hydraulic rams; Fulton water motor; power duplex pump; three weirs; recording altitude gauge; six pressure and altitude gauges. For compressed air: Clayton air compressor with jacketed cylinders; improved air motor; nozzles and air engines. For fuel and lubricants: Carpenter's fuel calorimeter with scales, balances, and oxygen generating devices; standard viscometer. For testing building materials: 100,000-pound Olsen automatic vertical testing machine driven by 5 horse-power Westinghouse electric motor, and fitted for tension, compression, and transverse testing; Fairbank's cement testing machine; 3,000-pounds transverse testing machine. The laboratory also contains an assortment of standard thermometers, weights and measures. The apparatus is so arranged that any of it may be used for separate or combined tests, or for any original investigations. Besides the equipment in this room, the electric light and power plant, the heating plant of the College and barracks, the isolated plants at the dairy, horticultural grounds, and pumping station are available for instructional purposes.

Electrical Engineering.

MR. RIGGS, INSTRUCTOR IN CHARGE.

JUNIOR CLASS.

BOTH TERMS.—Study of the elementary principles of electricity and magnetism; elementary dynamo design. Laboratory Work—Verifying the elementary principles of electrical science; setting up and use of primary and secondary batteries; determination of constants of standard instruments; calibration of instruments; wiring, putting in light fixtures, etc. Text and Reference Books, Ayrton's Practical Electricity, S. P. Thompson's Elementary Electricity and Magnetism, Stewart and Gee's Physics Vol. I, Gray's Absolute Measurements, Ewing's Magnetism.

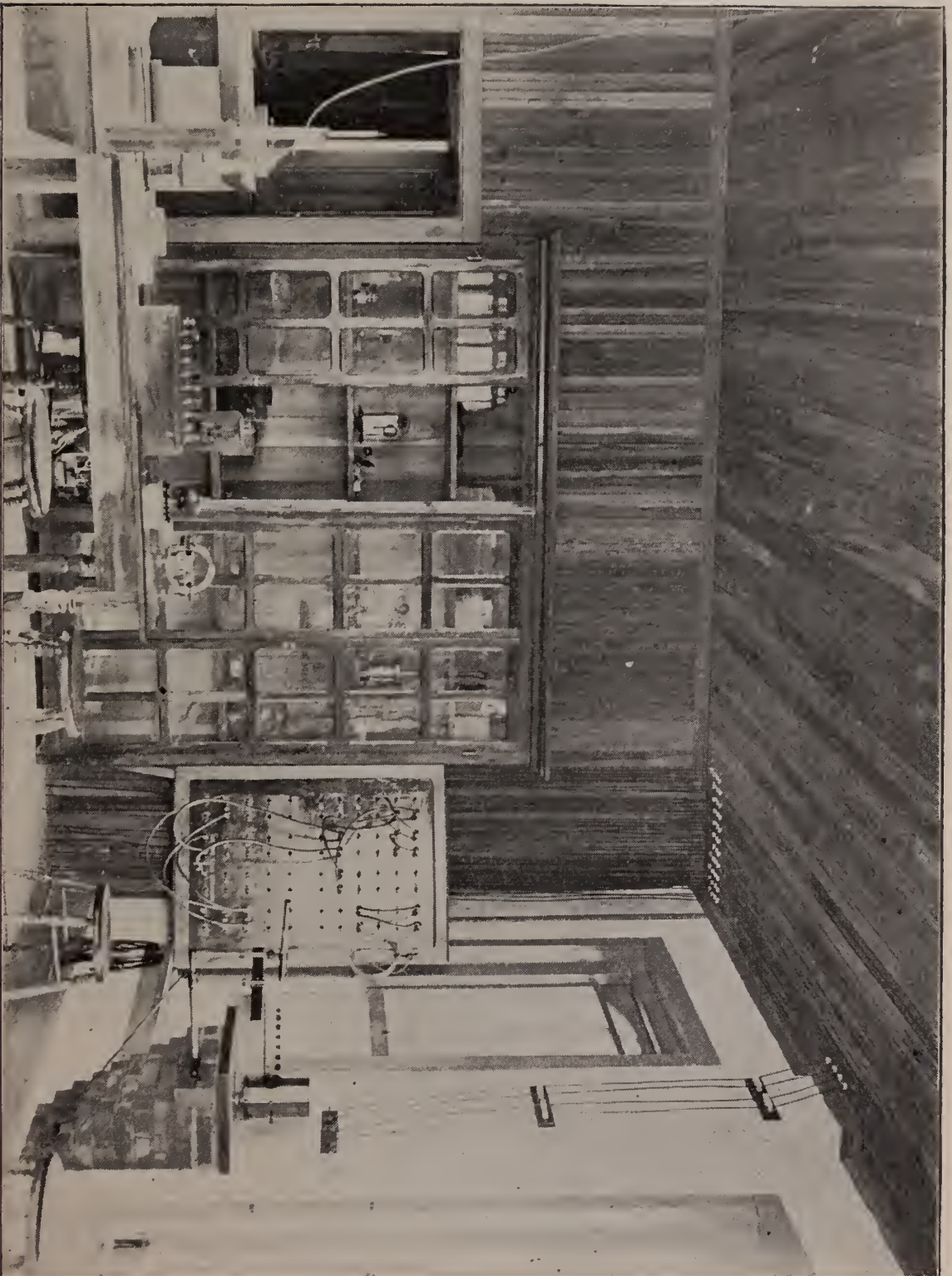
SENIOR CLASS.

BOTH TERMS.—Study of dynamo electric machinery; design of dynamos, transformers, and alternators. Special attention is given during the second term to the study of alternating currents and their applications to light and power. The course is supplemented [by lectures and problems on synchronous and induction motors, methods of wiring, specifications for plants, etc. A complete dynamo design, with finished and detail drawings, is required of each student. Laboratory Work—Care, management, and testing of dynamos—arc and incandescent; testing and management of direct current motors; calibration of voltmeters and ammeters; management of accumulators; photometry; tests and management of alternators, synchronous and induction motors, transformers, etc.; care and installation of wattmeters; house wiring; construction and winding of dynamos. Text and Reference Books, S. P. Thompson's Dynamo Electric Machinery; Fleming's Alternate Current Transformers, Vols. I and II; Jackson's Alternating Currents; Bell's Electric Transmission of Power; Nichols' Laboratory Manual, Vol. I; Henderson's Practical Electricity and Magnetism.

Equipment.

ELECTRICAL INSTRUMENT LABORATORY.—This laboratory is a separate brick building designed especially for electrical purposes, no iron, steel, or other magnetic substances being used in its construction. Besides the laboratory proper, it contains a lecture room and a dark room. The lecture room has a complete line of batteries and electrical instruments, models of dynamos, motors, transformers, arc and incandescent lights, etc., for class illustrations. The dark room, provided for photometry and X-ray work, contains a complete X-ray outfit, designed and built by students, also Crooke's tubes and Edison fluoroscope. The laboratory, in addition to all the necessary elementary apparatus, has the following instruments of precision: Kelvin-Deka ampere balance, Kelvin four coil astatic galvanometer, four D'Arsonval dead beat galvanometers, large ring tangent galvanometer, three Elliott Brothers' standard resistance sets, Elliott Brothers' standard tangent galvanometer, Queen's standard ballastic galvanometer, Nalder Brothers' sensitive galvanometer, Rowland-D'Arsonval ballistic galvanometer, Wells-Young standard condenser, Becker's chemical balance, Cahart-Clark standard cell, thermometers, Wheatstone bridges, etc.

DYNAMO LABORATORY.—In the dynamo laboratory are installed the following machines: 15 horse-power Payne engine, Brush 28 arc light generator, Thompson



SWITCH BOARD, CORNER ELECTRICAL INSTRUMENT LABORATORY.

Houston 4 arc light generator, two $2\frac{1}{2}$ horse-power Kester motors, 5 K. W. Edison compound wound generator, 20 horse-power Manchester motor, 5 K. W., D. C. Rotary and three phase converter, $2\frac{1}{2}$ horse-power three phase induction motor. The two machines last mentioned were built by students. Two 10 K. W. two phase alternators are now being built by students in the shops. The following measuring instruments are in use: Set of Weston portable ammeters and voltmeters, Ayrton spring voltmeter, Carden voltmeter, Sieman's electro-dynamometer, Kelvin electro-static voltmeter, Weston standard laboratory voltmeter, Thompson recording wattmeter, etc. Types of all the leading makes of arc lamps, open and enclosed, lightning arresters, and transformers are kept in this laboratory.

The machinery is driven by the Payne engine and the 20 horse-power Manchester motor mentioned above. Steam and electricity for these machines are furnished by the College power plant, located in the opposite wing of the same building. This plant consists of an 85 horse-power Corliss engine, driving an 18 K. W. Lundell generator and a 30 K. W. Weston generator. This station furnishes power to ten motors ranging from 3 to 20 horse-power. These motors are used at different points on the College property for a variety of purposes, such as pumping water, driving agricultural machinery, supplying power for machine shop, wood shop, etc. Several of these are at a considerable distance from the power station, thus furnishing examples of electrical transmission of power. Three of these, 7 horse-power each, were built by students. In addition to power for driving motors, the same generators furnish electricity for lighting the barracks and other College buildings. Students have access to this plant, and are thus enabled to see the practical workings of a combined electric light and power plant, and to test its efficiency.

The aim of the course is to make practical as well as theoretical electrical engineers.

(The division of Electrical Engineering will calibrate free of charge any voltmeter or ammeter that may be sent to the College for that purpose.)

REQUIREMENTS.—Special students desiring to pursue the electrical engineering courses must be prepared in mathematics as far as plane trigonometry for the junior course, and must have a working knowledge of the calculus for the senior course.

Drawing and Designing.

MR. YAGER, INSTRUCTOR IN CHARGE.

MR. LEE.

FRESHMAN CLASS.

BOTH TERMS.—Graded exercises in free hand drawing from plaster casts and other objects, beginning with the simplest geometric forms and extending to the sketching of simple machinery, fruits, grasses, flowers, and animals; principles of dimensioning and reading mechanical drawings; exercise in the use of instruments, making simple working drawings, shading and lettering.

SOPHOMORE CLASS.

BOTH TERMS.—Drawing in ink; practical geometrical problems relating to lines, angles, circles, tangents, polygons, and such curves as the ellipse, cycloid, helix, etc.; making complete mechanical drawings of pieces of machinery from working models; tracing and making blue prints. Descriptive Geometry.—This begins with definitions and elementary principles and includes the solution of problems with points, lines, planes, intersection and development of surfaces; perspective; shades and shadows.

JUNIOR CLASS.

BOTH TERMS.—Designing and making complete working draw-

ing of parts of machinery and structures, in accordance with the principles taught in the theoretical courses of applied mechanics.

SENIOR CLASS.

BOTH TERMS.—Designing and making detailed working drawings of special machines and structures, involving the applications of principles taught in the theoretical courses of mechanical, civil, and electrical engineering; thesis work. All designing and thesis work are done in conjunction with the other divisions of the departments.

Equipment.

The drawing rooms occupy the entire third floor of the mechanical building, 51x69 feet. The third and fourth floors of the tower are also used as dark room and blue print room, respectively. The free-hand and mechanical drawing rooms are equipped to accommodate 35 students each, with cases, boards, T-squares, etc., for over 200. Students are allowed the use of necessary instruments and apparatus free of charge.

Forge and Foundry.

MR. BOWMAN, INSTRUCTOR IN CHARGE.

FRESHMAN CLASS.

BOTH TERMS.—Forge Work.—The course in forging begins with instruction in the names of tools and building and managing fires. Graduated exercises are then taken up, including drawing out, upsetting, bending, punching, twisting, welding of iron, welding of steel, welding of steel and iron, annealing, hardening, tempering, case-hardening, bluing and browning. Some work is then done in ornamental forging. The practical instruction is supplemented, during the progress of the course, by lectures and notes on the principles involved, and the details of the best forge practice are thoroughly explained.

SOPHOMORE CLASS.

BOTH TERMS.—Foundry Work.—Students are taught the names and uses of tools; tempering of moulding sand; moulding and patching of moulds. Patterns of various shapes and sizes are used to illustrate the different principles of moulding, venting and gating; the use of risers, pressure gates, skim gates, gaggers, chaplets, facing sands; feeding of castings; core making; grading and mixing of iron; charging and managing the cupola. Four weeks are devoted to work in the brass foundry. The practical instruction is supplemented by a course of lectures.

Equipment.

FORGE SHOP.—This is a room, 37x60 feet, situated in a wing of the mechanical building. It is equipped with 18 Buffalo forges and steel-faced anvils, with sets of hammers, tongs, swages, fullers, flatters, etc. Continuous blast is furnished by a Buffalo blower driven by an electric motor. Steel hoods and stacks, which enter ventilators on the roof, serve to carry off the smoke by natural draft. The shop is also supplied with vises, swage blocks, emery wheel, bending cone, etc.



VIEW IN MECHANICAL DRAWING ROOM.

FOUNDRY.—The foundry occupies a room, 43x50 feet, adjoining the forge shop. It is equipped with a 26-inch Victor Colliau cupola, capable of melting 2,500 pounds of iron per hour; a brass furnace with its complement of tongs, crucibles, etc.; a crane of two tons capacity; ladles, flasks of different sizes, and twelve complete sets of moulder's tools. The Buffalo blower in the forge shop also furnishes blast for the cupola.

Machine Shop.

MR. POATS, INSTRUCTOR IN CHARGE.

JUNIOR CLASS.

BOTH TERMS.—Instruction begins at the bench with exercises in chipping and filing. Castings and drawings are given the student and he is required to chip and file each casting into the exact form and size represented by the corresponding drawing. From bench work the student is advanced to machine work, where he is taught turning, polishing, drilling, threading, planing, milling, etc., in iron, brass, and steel. In all cases the exercises are required to be worked to drawings. The graded course of exercises is designed to teach the fundamental principles and practices of machine metal-work, from the simplest to the most difficult operations. After completing this course of exercises, work is begun in the construction of tools, apparatus, etc.

SENIOR CLASS.

BOTH TERMS.—The senior year is devoted to more advanced work in the construction of engines, dynamos, motors, and other machines. The student is encouraged to work from his own designs as far as possible, but is guided and directed by the instructor in charge.

Equipment.

The machine shop is located on the first floor of the mechanical building. It contains fifteen benches with vises and kits of tools, and the following machines: 18 in. x 12 ft. engine lathe, 18 in. x 8 ft. engine lathe, 14 in. x 6 ft. engine lathe, two 14 in. x 6 ft. improved engine lathes, four 14 in. x 6 ft. Lodge and Shipley engine lathes, 10 in. x 4 ft. pattern maker's lathe, 15 in. x 8 ft. speed lathe, 18 in. drill press, 28 in. back-gear drill press, 22 in. x 22 in. x 6 ft. Powell planer, universal cutter and tool grinder, 15 in. crank-shaper, Springfield emery grinder, 12 in. power hack saw, 36 in. power grindstone. The motor which drives this machinery was built by students. A general tool-room contains all the necessary tools for use with the various machines.

Wood Work.

MR. BARNES, INSTRUCTOR IN CHARGE.

The course in wood work does not aim to make the student a skilled carpenter, but rather to teach the proper use of tools, and impress the importance of working to exact dimensions. At the same time, it gives a certain amount of manual dexterity, useful in every vocation.

FRESHMAN CLASS.

BOTH TERMS.—Names and uses of tools; graded exercises in

carpentry, joining, and wood turning; construction of articles from working drawings; use of turning lathe and other simple machinery; construction of boxes, desks, etc., involving dovetailing, gluing, polishing; turning of cups, vases, indian clubs and other wooden articles.

SOPHOMORE CLASS.

BOTH TERMS.—Use of wood working machinery, as planer, jointer, circular saw and moulding machine; pattern work with graded exercises, showing use of and reason for draft, halving, core prints and core boxes; patterns for machines under construction; advanced turning and cabinet work.

Equipment.

The wood shop occupies a two-story wing of the mechanical building, 45x100 feet. The lower story contains a 25 K. W. electric motor, band saw, planer, 16-in. jointer, double-headed sharper, moulding machine, mortising machine, tenoning machine, emery grinders, etc. The upper room, used for class work, contains a universal circular saw, two scroll saws, thirteen turning lathes with a set of eight tools for each, eighteen manual training benches with case of tools for each. Power is furnished by a 5 horse-power electric motor. A large dry-kiln furnishes seasoned lumber for use at all times.

Mathematics.

PROFESSOR CLINKSCALES.

ASSISTANT PROFESSOR BRODIE.

This course presupposes a thorough knowledge of arithmetic and of algebra through quadratics.

FRESHMAN CLASS.

FIRST TERM.—Complete Algebra.—Quadratics (reviewed); simple indeterminate equations; inequalities; theory of exponents; logarithms; proportion and variation; series; binomial theorem; continued fractions; theory of limits; indeterminate coefficients; exponential theorem; equations in general. Text-book, Wentworth's Complete Algebra.

SECOND TERM.—Plane Geometry.—Rectilinear figures; circles; similar figures; comparison and measurement of surfaces of polygons; regular polygons and circles. Special attention is given to the formation, on the part of students, of the habit of clear and accurate reasoning and concise expression. Text-book, Wentworth's Geometry.

SOPHOMORE CLASS.

FIRST TERM.—Trigonometry.—Functions of acute angles; right triangle; goniometry; oblique triangle; applications. Text-book, Wentworth's Trigonometry and Tables.

SECOND TERM.—Higher Algebra.—Solid Geometry.—Planes and solid angles; polyhedrons; cylinders and cones; spheres, spherical



CLASS IN FOUNDRY WORK.



polygons and pyramids; volume. Text-books, Wentworth's Higher Algebra and Wentworth's Geometry.

For agricultural students, the mathematical course ends with the sophomore year.

JUNIOR CLASS.

FIRST TERM.—Analytical Geometry.—Points and right lines in a plane; points and right lines in space; transformation of coordinates; circle; parabola; ellipse; hyperbola, higher plane curves; surfaces of revolution. Text-book, Wentworth's Analytical Geometry.

SECOND TERM.—Differential Calculus.—Differentiation of algebraic functions; transcendental functions; successive differentiation and development of functions; functions of two variables; tangents and asymptotes; maxima and minima; radius of curvature; evolutes and involutes; envelopes.

Integral Calculus.—Elementary forms of integration; rational fractions; integration of irrational fractions; successive reduction; integration of functions of two variables; lengths of curves; areas of plane curves; rectification of curves; cubature of volumes. Text-book, Taylor's Differential and Integral Calculus.

Civil Engineering.

ASSISTANT PROFESSOR BRODIE.

SOPHOMORE CLASS.

PLANE SURVEYING—All regular students take plane surveying on completing trigonometry in the sophomore year. This course includes the general principles and fundamental operations of surveying with compass, level and transit. The object of the instruction is to make practical surveyors, familiar both with the mathematical principles involved and the art of combining the theory and the practice. The field work includes actual surveys of extensive tracts of land, of which the areas are computed and accurate plats are drawn. Experience is given in retracing the lines of old surveys, in numerous problems of laying out and dividing up land, and in locating intricate, irregular boundaries. Practice is also had in section leveling, laying out terraces, ditches, etc. Ample training is here furnished for the needs of agricultural students, and a good preparation is given for the higher work of the engineering courses. Text and reference books, Davies-Van Amringe's Surveying, Gillespie's Surveying.

JUNIOR CLASS.

BOTH TERMS.—Use and adjustment of transit, stadia, solar compass, and plane table; topographic surveying with transit and stadia;

railroad topography; triangulation; geodesy; city and hydrographic surveying; map and plan drawing, topographical symbols, map lettering, etc.

Highway Engineering.—Location, construction and maintenance of the country roads and city streets; advantages of various materials for road covering; effects of grades and surface upon the cost of transportation; plans and specifications; practical problems in change of grade and relocation, from surveys of existing roads.

Theory of Railway Construction.—Preliminary and location surveys; location from contour map; laying out of simple and compound curves; setting of slope stakes; computation of earthwork; switches; turnouts; theory of economic location; effects of grades, curves and length upon the cost of operation. Text and reference books: Johnson's Higher Surveying, Gillespie's Roads and Railroads, Burns' Highway Construction, Searles' Field Engineering, Wellington's Economic Location.

SENIOR CLASS.

BOTH TERMS.—Railway Engineering.—Surveys are made for a line of railway a mile or more in length; the necessary plans, profiles and cross-sections are prepared; grades are determined, curves laid out, slope stakes set, and all the needed measurements made to enable the student to compute the excavations and embankments, and to estimate the cost of construction.

Roofs and Bridges.—Mechanics of construction; derivation of practical formulas; foundations; stability of walls and arches; analytical and graphical investigation of stresses in framed structures; calculation of stresses in plate girders, Howe, Pratt, Warren, and lattice bridges and various kinds of roof trusses; bridge designing.

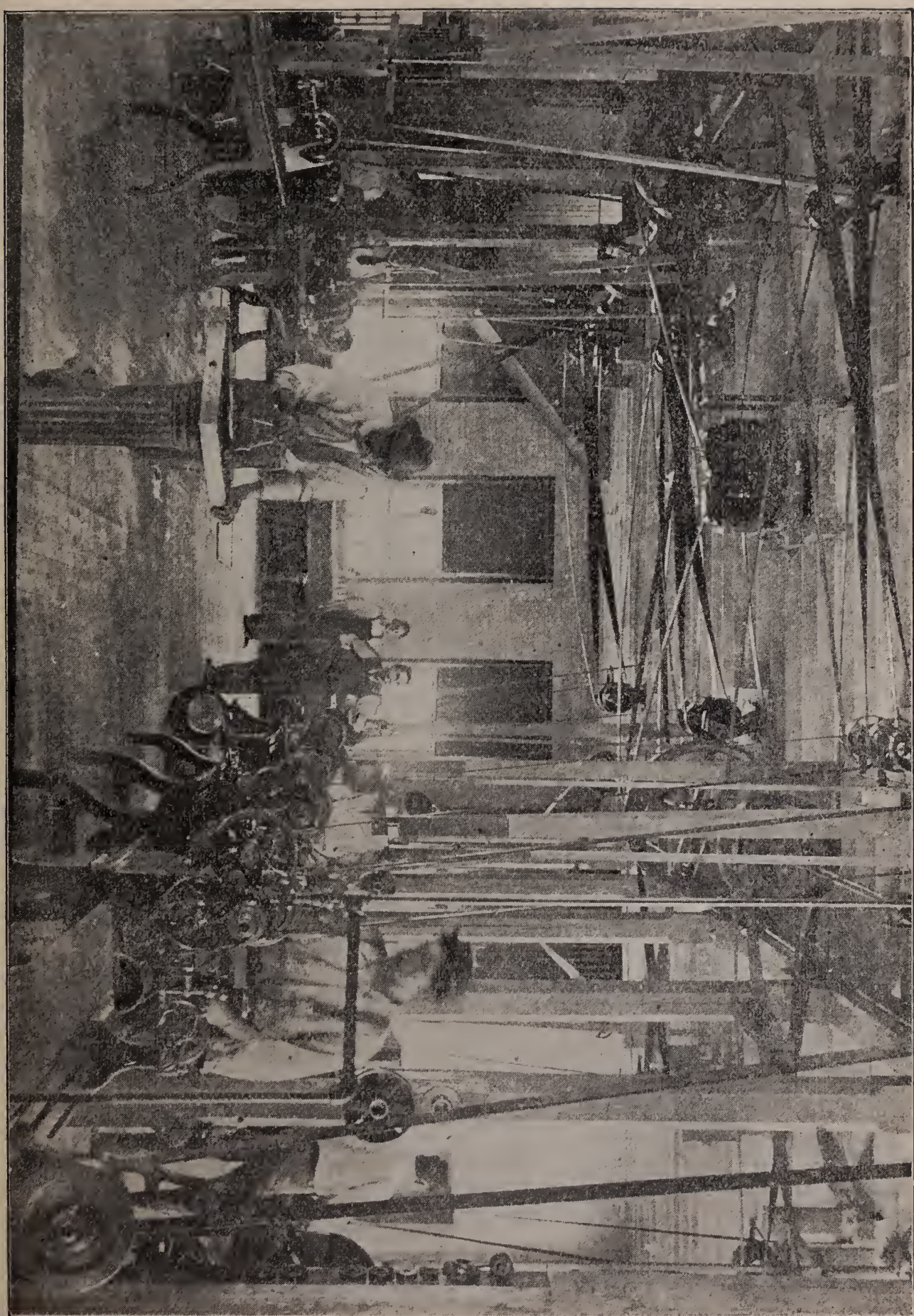
Hydraulic Engineering.—The laws of pressure and flow of water and other principles of hydrostatics and hydraulics are taught, both theoretically and practically; measurement of volume of discharge by weir or miner's inch; turbines and other water wheels; construction of water works for towns and cities; building of dams and reservoirs and computation of their stability; irrigation.

Text and reference books, Wheeler's Civil Engineering, Merri-man's Mechanics of Materials, Merriman and Jacoby's Roofs and Bridges, Merriman's Hydraulics.

Equipment.

The collection of field instruments contains the following: Two 6-inch vernier compasses; 20-inch wye level; engineer's transit, with stadia; plane table, with 9-inch telescope, vertical circle and stadia; drainage level; 12-foot self-reading leveling and stadia rod; 12-foot New York leveling rod; 10-foot cross-section rod, graduated; Gurley's clinometer, reading to degrees; two surveyor's chains; engineer's chain; standard 100-foot steel tape, graduated to hundredths of a foot; and full supply of ranging poles, flag poles, and other accessories. There are also sets of drawing instruments for office work.

In addition to the drawing done under the immediate direction of the instructor in this division, the regular work in drawing and designing provided for civil engineering students is arranged with special view to their exact needs.



English.

PROFESSOR FURMAN,
ASSISTANT PROFESSOR M'LUCAS.

The purpose of the course in English is to enable the student to acquire the power to express his thoughts with clearness, precision and force; and to cultivate in him a taste for good literature. Elementary English grammar and the rudiments of composition are taught in the Fitting School.

FRESHMAN CLASS.

Lockwood's Lessons in English; Strang's Exercises; readings from Irving and Scott; exercises in composition; supplementary readings.

SOPHOMORE CLASS.

Clark's Practical Rhetoric; weekly exercises in composition; supplementary readings.

JUNIOR CLASS.

Pancoast's English Literature; Hawthorne and Lemmon's American Literature; critical study of Macaulay's Warren Hastings; monthly essays; supplementary readings.

SENIOR CLASS.

Study of Shakespeare; Dowden's Primer and the reading of three plays; advanced rhetoric; monthly essays; supplementary reading; exercises in elocution.

History.

PROFESSOR MORRISON.

FRESHMAN CLASS.

South Carolina History.—Text-book (Weber's) and lectures.
Commercial Geography.—Text-book (Tilden's) and lectures.

SOPHOMORE CLASS.—(Mechanical).

Civics.—Text-book (True and Dickinson's Our Republic) and lectures.

General History.—Text-book, Myers', begun.

JUNIOR CLASS.—(Agricultural).

Civics.—Text-book (True and Dickinson's our Republic) and lectures.

General History.—Text-book, Myers', begun.

SENIOR CLASS.

General History.—Text-book, Myers', completed.

Economics—Text-book, Walker's Political Economy, Briefer Course.

Military Science and Tactics.

PROFESSOR FULLER.

JUNIOR AND SENIOR CLASSES.

BOTH TERMS.—The course in military instruction, as prescribed and followed, is both theoretical and practical. The theoretical instruction, given by recitations and lectures, includes the subjects of organization and administration, grand and minor tactics, logistics, castrametation, military engineering, gunnery and pyrotechnics, military history, etc. The practical instruction includes infantry drill, in the school of the soldier, the company, the battalion and the evolutions of the regiment, in both close and extended order, target practice, and guard duty, and in the manual of the piece in light artillery drill. Practice is also given in signaling with the flag.

The cadets are subject to military discipline at all times, and all are required to take part in drill, guard duty, and other military exercises.

The organization of the corps of cadets is regimental, consisting of two battalions of two companies each, each battalion being commanded by one of the instructors of the college, having the local rank of Major. This organization permits the practical instruction being carried to a greater extent than a single battalion formation would allow.

In addition to the benefit which the general government derives from the military instruction given at this and other colleges, it is believed that the discipline enforced, the habits of punctuality and obedience inculcated, the improvement in bearing and appearance of those instructed, and also the practice in directing and commanding others, which nearly all in course of time get, is of immense benefit to the students individually.

Uniform.

The College uniform is of cadet grey of the West Point pattern, except that the College button is used. For military full dress, the cadet officers wear a plume and sash, and the non-commissioned officers and privates a pompon. This uniform is made of the best Charlottesville mills goods, is neat, and, considering the make and material, is very inexpensive.

Regulations.

In addition to the special regulations of the military department, cadets are subject to the following general regulations :

Cadets will at all times be respectful in their bearing to the professors and other officers of the College.

The practice known as hazing is positively forbidden, and any cadet indulging in this practice will be expelled from the College.



CORPS OF CADETS.

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Cadets are positively forbidden to use or to have in their possession intoxicating liquors of any description.

The use of tobacco in any form by cadets is prohibited.

Profanity is positively forbidden.

Cards and all games of chance are positively forbidden.

All combinations of cadets for the purpose of censuring or praising one of their number are prohibited; also all combinations to defeat the purpose of any regulation of the College.

Fighting is positively forbidden. If any cadet shall consider himself wronged by another or by a professor or by an officer, he is to complain thereof in writing to the president, who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

No cadet will take food from the mess-hall without permission from the president.

Any cadet receiving 100 demerits during a term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

Textile School.

The increasing development of cotton manufacturing in South Carolina has made it seem wise to the Trustees to incorporate in the work of the college a course of instruction and training in the manufacture of cotton. This will be known as the Textile Department.

While at present the purpose is to give attention to the processes of cotton manufacture only, the plans are laid so as to admit of a future expansion of this department to cover a wider field in textile arts, including the manufacture of wool, silk, linen and other fibres.

The start now being made is a modest one, but the field is large and it is hoped to expand the department in such a way as to give opportunity to the youth of the State to get at home the necessary knowledge and skill to qualify them to enter at once into advanced positions in textile manufacturing.

The course to be inaugurated in the beginning will be confined to instruction and training in the more ordinary processes of cotton manufacturing. Samples of the different machines will be in operation in the textile building. Students will be required to make themselves familiar with the construction and management of these machines.

The exact extent of the instruction to be offered next session has not yet been fully determined. A special circular, setting forth the courses in detail will be issued later, and will be furnished upon application to the President of the College. Correspondence is invited.

REGISTER OF STUDENTS AND ALUMNI.

Postgraduate Students.

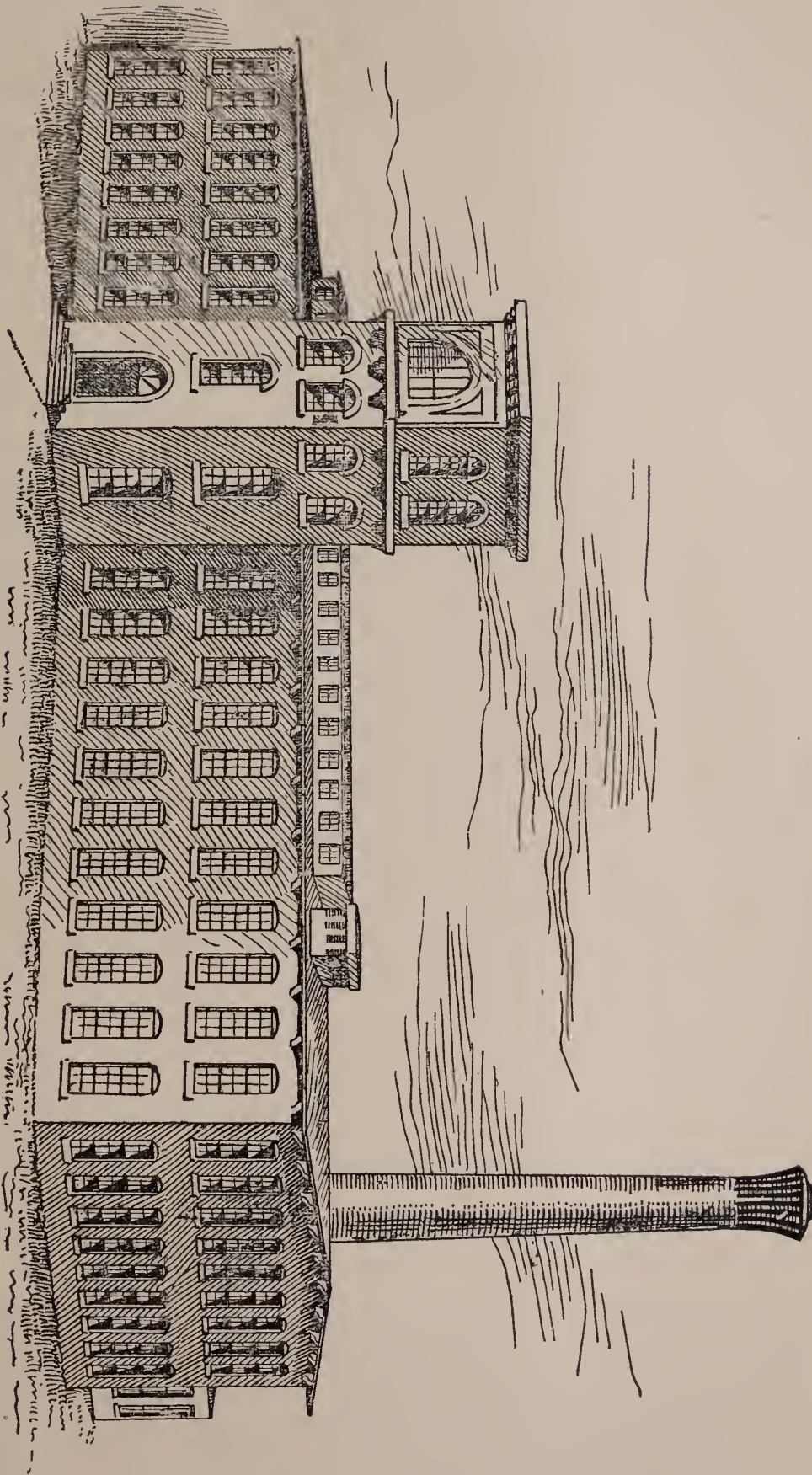
Name.		County.
Blaine, J. M.....	Class '96.....	Fairfield
Bryan, A. B.....	Class '98.....	Barnwell
Bowen, J. T.....	Class '96.....	Pickens
Bryant, F. L.....	Class '96.....	Spartanburg
Cothran, T. W.....	Class '96.....	Greenwood
Furman, C. M., Jr.....	Class '96.....	Oconee
Hanvey, J. T.....	Class '98.....	Abbeville
Henry, D. H.....	Class '98.....	Abbeville
Klugh, W. W.....	Class '96.....	Greenwood
Lee, R. E.....	Class '96.....	Greenwood
McCrary, J. A.....	Class '98 ..	Anderson
Moorman, T. S.....	Class '96.....	Richland
Moore, J. H.....	Class '96.....	Abbeville
Robertson, B. F.....	Class '96.....	Pickens
Rogers, D. F.....	Class '98.....	Marion
Sloan, B. F.....	Class '96.....	Oconee
Swygert, G. H.....	Class '98.....	Lexington
Tillman, B. R., Jr.....	Class '96.....	Edgefield
Turnipseed, B. R.....	Class '96.....	Richland
Vogel, T. R.....	Class '98.....	Barnwell
Werts, L. A.....	Class '96.....	Edgefield

Special Students.

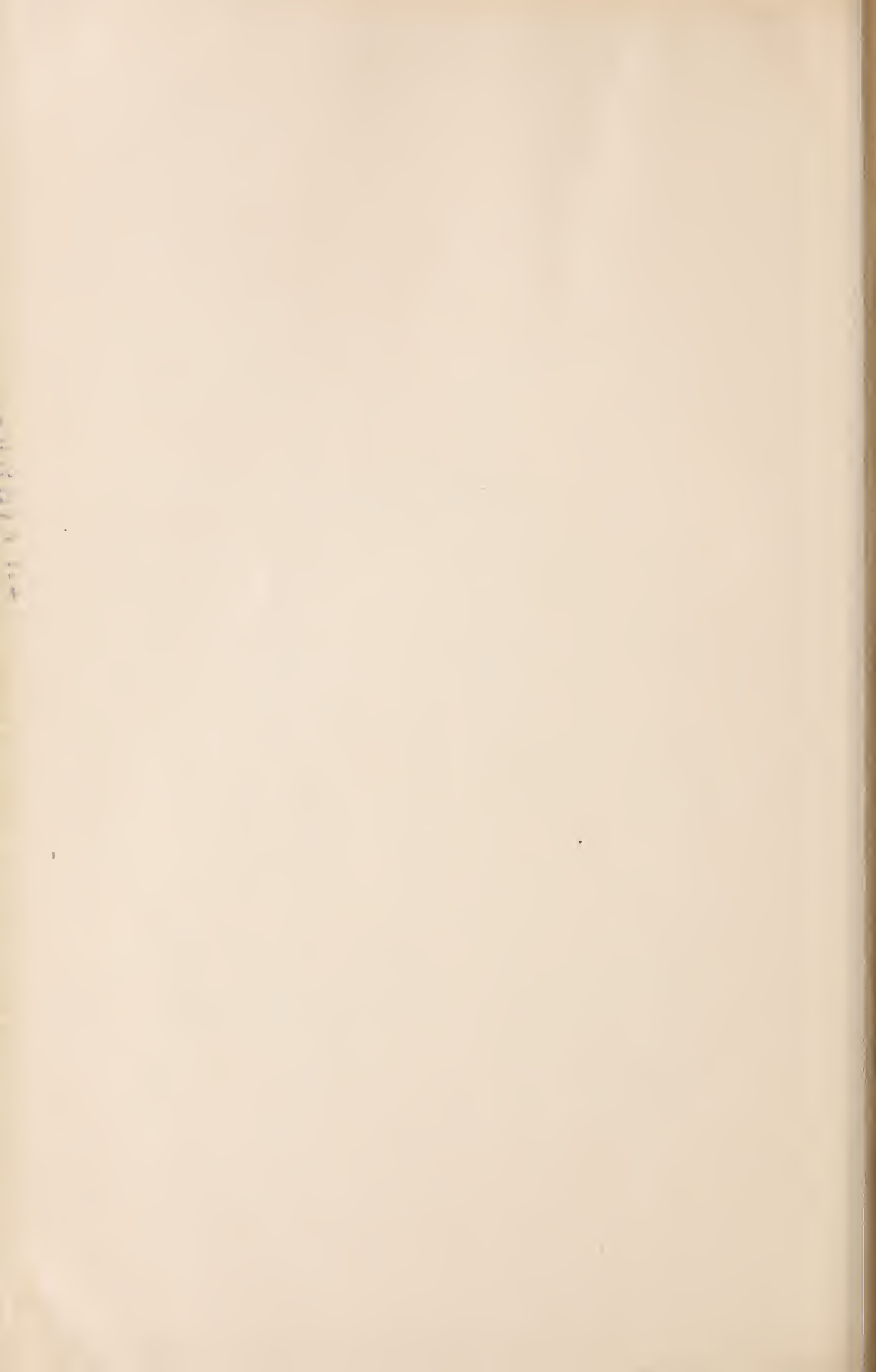
Name.	County.
Bradford, C. H.....	Lexington
Burgess, J. H.....	Clarendon
Johnson, E. L.....	Pickens
Newman, C. C.....	Oconee

Regular Students.

Name.	County.	Name.	County.
Adams, W. G.....	Darlington	Bell, E. P.....	Anderson
Aldrich, R. M.....	Barnwell	Bellinger, E. W.....	Barnwell
Alford, E. P.....	Florence	Bellows, C. A.....	Beaufort
All, J. E.....	Barnwell	Blease, J. W.....	Saluda
All, P. H.....	Barnwell	Blakeney, J. R.....	Lancaster
Allen, J. E., Jr.....	Barnwell	Blohme, J. C., Jr.....	Charleston
Anderson, J. F.....	Laurens	Boone, S. R.....	Orangeburg
Anderson, J. Wall...	Chester	Bouzard, H. F.....	Orangeburg
Anderson, J. W.....	Chester	Bowers, A. D.....	Saluda
Ansel, J. F.....	Oconee	Boykin, E. B.....	Darlington
Austin, W. J.....	Abbeville	Boykin, L.....	Kershaw
Ayers, L. W.....	Orangeburg	Boylston, C. R.....	Barnwell
Bailey, M. M.....	Barnwell	Brennecke, L. A.....	Oconee
Barker, F. H.....	Pickens	Brock, W. T.....	Chesterfield
Barrett, R.....	York	Brodie, M. A.....	Charleston
Beattie, A. J.....	Lancaster	Brookbanks, T. A....	Charleston
		Brooks, M. B.....	Greenwood



TEXTILE SCHOOL, BUILDING,
(In course of erection.)



Name.	County.
Brooks, U. R	Richland
Brown, J. H.	Oconee
Browne, D. O.	Anderson
Bryan, A. B.	Barnwell
Bryson, D. L.	Fairfield
Butler, A. A.	Charleston
Bynum, E. M.	Live Oak, Fla
Byrd, H. S.	Darlington
Byrd, W. A.	Edgefield

Caine, W. P	Laurens
Calhoun, J. S., Jr.	Barnwell
Calhoun, R. S.	Barnwell
Campbell, D. M.	Colleton
Campbell, S. D.	Greenville
Cannon, J. C.	Spartanburg
Cannon, R. S.	Newberry
Carpenter, L. F.	Anderson
Carr, A. B.	Richland
Carter, A. H. J.	Charleston
Carter, J. M.	Florence
Carwile, J. P.	Abbeville
Caughman, J. E.	Saluda
Cave, L. G.	Barnwell
Cave, W. C.	Barnwell
Chapman, J. H.	Greenville
Chapman, W. E.	Greenville
Chase, T. C.	Richland
Cheatham, J. C.	Abbeville
Cheatham, J. E.	Abbeville
Chreitzberg, C. K.	Charleston
Chreitzberg, H. R.	Charleston
*Clark, H. F.	Lexington
Clark, J. S.	Barnwell
Clark, J. W.	Barnwell
Clowney, J. B.	Fairfield
Clyburn, T. L.	Lancaster
Cobb, W. W.	Anderson
Cohen, M. E.	Sumter
Cole, W. F.	Rockingham, N. C
Coleman, S. L.	Greenville
Coleman, W. W.	Florence
Connor, L. E.	Charleston
Cook, P.	Barnwell
Cope, W. D.	Orangeburg
Copeland, F. P.	Darlington
Cottingham, L.	Marion
Crawford, F.	Pickens
Crawford, R. C.	Pickens
Croft, R. B.	Aiken

Darlington, W. R., Jr.	Barnwell
Davis, A. E.	Darlington
Davis, J. P.	Edgefield
Davis, S. A.	Oconee
DeLoach, B. P.	Kershaw
DesChamps, E. G.	Sumter

Name.	County.
Devlin, J. O.	Greenwood
Devlin, O. E.	Edgefield
Donaldson, J. R.	Marlboro
Douglass, C. B., Jr.	Fairfield
Douthit, C.	Anderson
DuBose, J. H.	Darlington
Duckworth, J. C.	Anderson
Elder, M. L.	York
Emery, J. R.	Beaufort
Epps, H. G.	Williamsburg
Erwin, A.	Anderson
Etheredge, J. F.	Lexington
Evans, J. A.	Marion
Evans, T. B.	Marion

Fair, W. N.	Edgefield
Fairy, E. C.	Orangeburg
Felder, F. B.	Orangeburg
Fellers, G. K.	Greenwood
Fickling, C. J.	Barnwell
Finger, E. R.	Spartanburg
Finklea, J. O.	Florence
Fitzsimons, A. R.	Charleston
Fitzsimons, W. S.	Charleston
Fletcher, B. A.	Marlboro
Fore, T. E.	Marion
Forsythe, R. G.	Brevard, N. C
Forsythe, W. C.	Brevard, N. C
Foster, J. B.	Union
Franks, H. M.	Laurens
Funchess, J. H.	Orangeburg

Gaffney, C. L.	Cherokee
Gandy, W. H.	Darlington
Garland, J. A.	Aiken
Garris, J. S.	Colleton
Garrison, W. D.	Anderson
Gentry, C. W.	Spartanburg
Gentry, J. H.	Atlanta, Ga
George, P. A.	Marion
George, W. D.	Lexington
Glenn, J. P.	Spartanburg
Glenn, T. K.	Anderson
Glover, H. P.	Greenville
Goff, A. T.	Edgefield
Goodman, J. C.	Oconee
Goodman, W. P.	Oconee
Gorman, J. C.	Richland
Graham, J. S.	Charleston
Graham, R. C.	Charleston
Gray, H. K.	Greenville
Gray, J. J., Jr.	Barnwell
Gray, J. W.	Darlington
Green, F. L.	Sumter
Gunby, F. M.	Orangeburg
Gunby, J. W.	Orangeburg

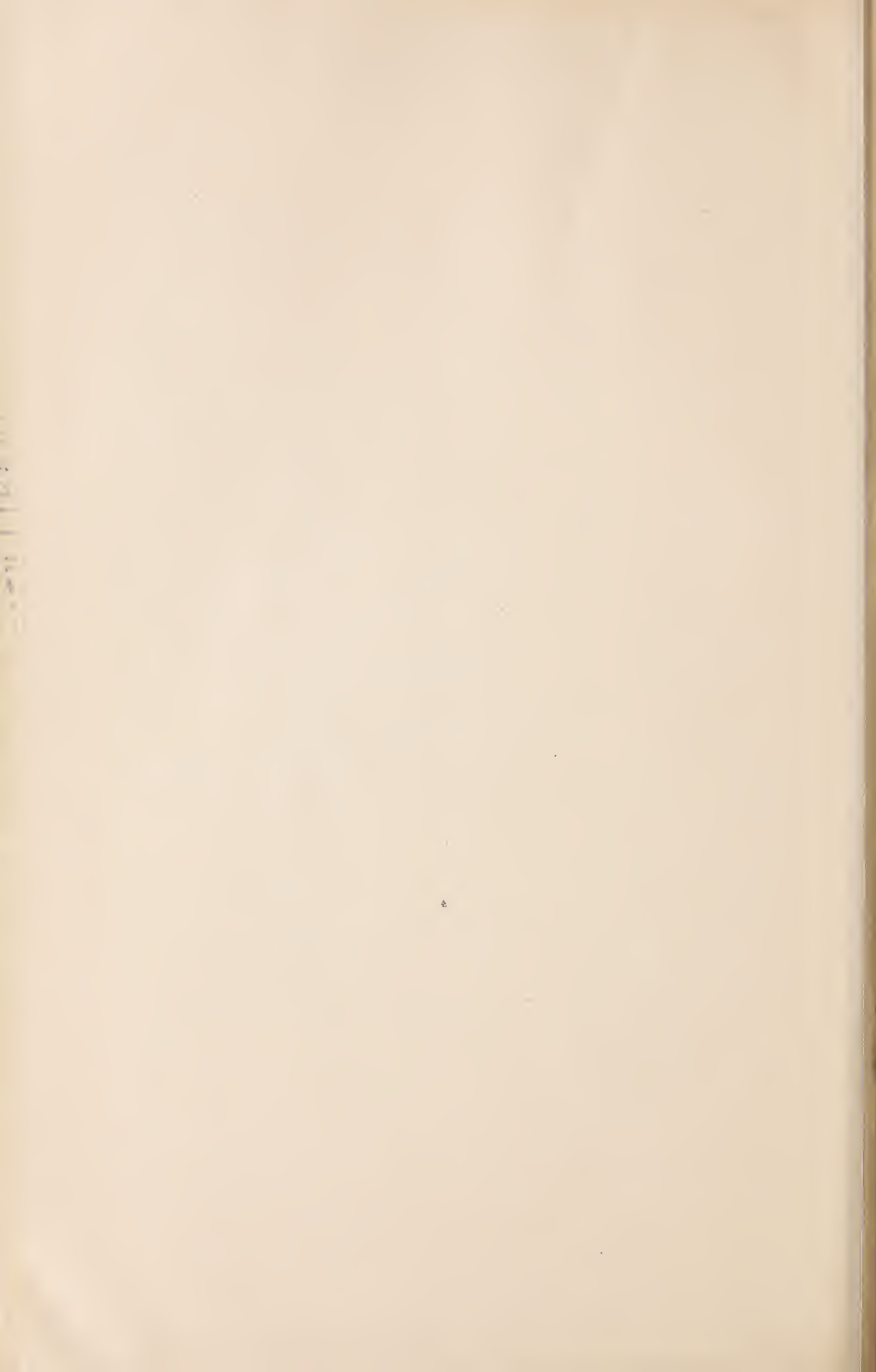
* Died December 12th, 1897.

Name.	County.	Name.	County.
Hair, H. B.....	Barnwell	Kloeckler, C.....	Mt. Airy, Ga
Hallum, R. T.....	Pickens	Klugh, G. F.....	Greenwood
*Hamilton, T. L.....	Fairfield	Knight, B. F.....	Lancaster
Hammond, W. L....	Anderson	Koth, H. S.....	Hampton
Hanvey, G. A., Jr....	Abbeville		
Hanvey, J. T.....	Abbeville	LaBoon, W. H.....	Anderson
Hard, C. F.....	Charleston	Lamar, E. W.....	Aiken
Hardin, J. D.....	York	†Lanham, W.....	Clarendon
Harling, J. F.....	Edgefield	Lawrence, B. R.....	Pickens
Harper, J. W.....	Savannah, Ga	Lawrence, H. Y.....	Pickens
Harrison, R. E....	Knoxville, Tenn	Lawrence, J. H.....	Pickens
Haselden, G. E.....	Marion	Lawson, C. S.....	Union
Haselden, L. B.....	Marion	Lawton, F. A., Jr....	Hampton
Hawthorn, A. C.....	Abbeville	Lawton, F. B.....	Hampton
Hayne, F. I.....	Greenville	Lawton, R. O.....	Hampton
Haynsworth, R. B...	Florence	Lawton, T. O.....	Hampton
Hays, A. F.....	Charleston	Lawton, W. J.....	Hampton
Hearon, R. L.....	Sumter	Lee, D. L.....	Williamsburg
Henderson, L. D....	Laurens	Leech, J. S.....	York
Henry, D. H.....	Abbeville	Leech, S. W.....	York
Hicks, J. C.....	Oconee	Legare, S. C.....	Berkeley
Hill, W. G.....	Abbeville	Leitch, W. W.....	Charleston
Hogg, T. F.....	Barnwell	Lewis, D. G.....	Pickens
Holland, J. C.....	Laurens	Lewis, D. S.....	Oconee
Hook, J. H.....	Orangeburg	Lewis, G. P.....	Pickens
Hook, W. N.....	Orangeburg	Lewis, J. B.....	Charlotte, N.C
Hopkins, W. H.....	Richland	Lewis, J. E., Jr.....	Oconee
Howze, M. C.....	Union	Lewis, J. L.....	Marion
Howze, W. K.....	Union	Lightsey, H. W.....	Hampton
Hoyt, H. F.....	Sumter	Liles, S. E.....	Marlboro
Hughes, E. T.....	Orangeburg	Linder, W. L.....	Union
Huguenin, C. C.....	Charleston	Little, H. F.....	Spartanburg
Humbert, D. C.....	Pickens	Long, J. F.....	Anderson
Humphreys, D. K....	Greenville	Lotz, J. F.....	Colleton
Hunter, H.....	Pickens	Lumpkin, S. H.....	Fairfield
Hunter, M. N.....	Anderson		
		McCall, H. B.....	Florence
Ihly, M. D.....	Hampton	McCarrel, H.....	Charleston
Irby, W. C.....	Laurens	McCaskill, C. E.....	Kershaw
		McClure, C. M.....	Anderson
Jeffares, J. W.....	Fairfield	McCrary, H. N.....	Anderson
Jenkinson, D. E.....	Clarendon	McCrary, J. A.....	Anderson
Jennings, D.....	Charleston	McFadden, W. H....	Chester
Jennings, H. B., Jr..	Charleston	McKinley, C. G.....	Charleston
Johnson, E. E.....	Spartanburg	McKinley, F. J.....	Charleston
Johnson, J. A.....	Kershaw	McLendon, R.....	Darlington
		McLendon, W. E....	Darlington
Kaigler, B. H.....	Lexington	McLucas, J. L.....	Marlboro
Kaigler, J. G.....	Lexington	McMakin, J. W.....	Spartanburg
Kelly, W. C.....	Darlington	McMaster, J. G.....	Fairfield
Kennedy, J. L.....	Laurens	McWhite, E. W.....	Florence
Killingsworth, M. A.	Barnwell	Mahaffey, C. B.....	Anderson
King, L. L.....	Berkeley	Mancke, W. S.....	Richland
Kinsler, J. H.....	Richland	Marjenhoff, F. D....	Charleston
Kirkland, J. B.....	Barnwell	Marshall, R. W.....	Williamsburg
Kirksey, J. K., Jr....	Pickens	Martin, D. C.....	Laurens
Kittles, V. H.....	Hampton	Mathis, A. J.....	Barnwell

* Died June 29th, 1897.

† Died February 17th, 1898.





Name.	County.
Mathis, H. M.....	Barnwell
Mathis, W. G.....	Barnwell
Matthews, E. C.....	Barnwell
Matthews, J. W.....	Barnwell
Mauldin, C. E.....	Greenville
Mauldin, C. W.....	Pickens
Mauldin, L. O.....	Pickens
Maxwell, J. D.....	Anderson
Maxwell, J. F.....	Anderson
*Mikell, T.....	Berkeley
Miller, J. R.....	Anderson
Miller, R. B.....	Chesterfield
Minus, J. P.....	Dorchester
Mixson, J. C.....	Richland
Moise, W. L.....	Sumter
Moore, H. W.....	Marlboro
Moore, P. W.....	Greenville
Moore, T. W.....	Spartanburg
Morrer, W. M.....	Dorchester
Morrison, W. J.....	Hampton
Moses, A. J., Jr.....	Sumter

Napier, W. P.....	Marlboro
Nettles, W. F.....	Clarendon
Newman, H. S.....	Oconee
Newman, Q. B.....	Anderson
Newell, W. H.....	Anderson
Nimmons, R. L.....	Oconee
Nixon, J. B., Jr.....	Charleston

Odell, J. F.....	Beaufort
Odiorne, J. W.....	Florence
Oelkers, C. H.....	Oconee
Oliver, N.....	Darlington
Otis, R. K.....	Charleston
Owen, J. L.....	Anderson
Owings, C. B.....	Laurens

Parker, J. O.....	Barnwell
Parnell, C. R.....	Darlington
Parrott, W. H.....	Darlington
Patterson, R. S.....	Augusta, Ga
Paul, S.....	Beaufort
Peake, J. T.....	Laurens
Pearman, F. E.....	Anderson
Pearman, S. D.....	Anderson
Pegues, B. F.....	Marlboro
Pegues, E. S.....	Marlboro
Percival, E. W., Jr...	Charleston
Perry, R. M.....	Chester
Pickett, E. H.....	Oconee
Porter, J. A.....	Orangeburg
Pou, J. R.....	Lexington

Quattlebaum, W. M.. Fairfield

Name.	County.
Ramsey, H. L.....	Spartanburg
Rawl, B. H.....	Lexington
Rawl, R. P.....	Richland
Reckling, W. T.....	Richland
Redfearn, J. C.....	Chesterfield
Reeder, W. C.....	Newberry
Reeves, R. N.....	Fairfield
Rembert, R. E.....	Sumter
Rhame, C.....	Sumter
Riggs, A. F.....	Orangeburg
Ritter, W. M.....	Orangeburg
Roddey, J. H.....	York
Rogers, D. F.....	Marion
Ross, J. A.....	Darlington

Sabine, G. R.....	Atlanta, Ga
Salley, J. E.....	Orangeburg
Sanders, H. M.....	Newberry
Sanders, J. W.....	Anderson
Sanders, W. A.....	Chester
†Sanders, W. C.....	Anderson
Sarratt, J. A....	Cherokee
Sarratt, W. J.....	Cherokee
Sauls, E. C.....	Colleton
Searson, R. P., Jr....	Barnwell
Seigler, C. H.....	Aiken
Shaw, T. C.....	Abbeville
Shaw, W. P.....	Charleston
Shealy, A. S.....	Edgefield
Shealy, E. M.....	Union
Sheppard, T. C.....	Charleston
Sloan, S. M.....	Oconee
Smith, H. G.....	Oconee
Smith, J. B.....	Bamberg
Smith, J. D.....	Spartanburg
Smith, J. L.....	Marion
Smith, W. R., Jr....	Newberry
Snelgrove, J. C.....	Anderson
Spencer, J. H.....	York
Spencer, R. L.....	York
Sprott, C. N.....	Clarendon
Stacy, A.....	Cherokee
Stacy, C. C.....	Cherokee
Stallings, G. F.....	Aiken
Starling, W. D.....	Richland
Steele, B. B.....	Williamsburg
Stephens, J. F.....	Newberry
Stephens, J. R.....	Greenwood
Still, R. B.....	Barnwell
Stockman, J. H.....	Greenwood
Stokes, H. G.....	Hampton
Stone, C. B.....	Edgefield
Stone, J. A.....	Edgefield
Stone, R. B.....	Edgefield
Stoudenmire, C. L....	Orangeburg
Stribling, J. H.....	Pickens
Stribling, M. D.....	Oconee

* Died June 28th, 1897.

† Died June 16th, 1897.

Name.	County.
Stribling, T. L.....	Oconee
Stubbs, A. J.....	Sumter
Stubbs, C. E.....	Sumter
Stuckey, J. D.....	Darlington
Stukes, J. T.....	Clarendon
Sullivan, D. A. J.....	Spartanburg
Sullivan, J. F.....	Spartanburg
Swearingen, G. F.....	Edgefield
Sweatt, J. H.....	Barnwell
Swygert, G. H.....	Lexington
Swygert, J. S.....	Fairfield
Talbert, A. D.....	Edgefield
Tatum, T. H.....	Orangeburg
Taylor, A. E.....	Greenwood
Taylor, G.....	Florence
Taylor, I. B.....	Greenwood
Thees, H. C.....	Charleston
Thompson, J. W.....	Kershaw
Thomson, J. C.....	Washington, D.C.
Thornley, B. K.....	Pickens
Tillman, H. C.....	Edgefield
Tison, H. R.....	Barnwell
Traxler, D. B.....	Florence
Tribble, J. W.....	Anderson
Turbyfill, J. S. M.....	Spartanburg
Turner, G. C.....	Barnwell
Turner, J. T.....	Laurens
Turner, T. H.....	Barnwell

Name.	County.
Turnipseed, L. A....	Richland
Vance, W. G.....	Greenville
Vogel, T. R.....	Barnwell
Wade, B. H.....	Aiken
Walker, J. N.....	Barnwell
Walker, N. D.....	Union
Walker, T. J.....	Barnwell
Walker, W. F.....	Barnwell
Walker, W. P.....	Barnwell
Wannamaker, J. G., Jr.	Orangeburg
Watkins, J. B.....	Greenville
Webb, T. R.....	Laurens
Wells, C. H.....	Orangeburg
Weston, T. I.....	Richland
White, B. L.....	Charleston
White, J. D.....	Sumter
Whitten, E. G.....	Anderson
Wiggins, G.....	Berkeley
Williamson, J. E.....	Sumter
Wilson, H. A.....	Sumter
Wise, A. C.....	Chester
Wise, E. M.....	Florence
Wise, J. T.....	Aiken
Wright, C. W.....	Laurens
Wright, W. P.....	Laurens
Zeigler, M. E.....	Orangeburg

Irregular Students.

Name.	County.
Clinkscales, L. D.....	Oconee
Clinkscales, G. B.....	Oconee
Cole, A. B.....	Rockingham, N. C.
Hair, J. K.....	Bamberg
Hendricks, L. L.....	Pickens
Homesley, A. B.....	Shelby, N. C.
LaGrone, J. H.....	Saluda
Lee, J. T.....	Greenwood
McFadden, V. G.....	York
Marshall, F. D.....	York

Name.	County.
Mays, B. F.....	Edgefield
Moorer, M. J. E.....	Dorchester
Moseley, F. N.....	Williamsburg
Norris, A. P.....	Greenville
Postell, J. A.....	Colleton
Simpson, T. S.....	Anderson
Stribling, J. C.....	Oconee
Tompkins, T. W.....	Richland
Welling, W. H.....	Charleston



BASE BALL, TEAM.



Summaries.

BY COUNTIES IN SOUTH CAROLINA.

Abbeville.....	11	Hampton.....	11
Aiken.....	7	Kershaw.....	5
Anderson.....	31	Lancaster.....	4
Bamberg.....	2	Laurens.....	14
Barnwell.....	39	Lexington.....	9
Beaufort.....	4	Marion.....	10
Berkeley.....	4	Malboro.....	8
Charleston.....	30	Newberry.....	5
Chester.....	6	Oconee.....	23
Chesterfield.....	3	Orangeburg.....	21
Cherokee.....	5	Pickens.....	20
Clarendon.....	6	Richland.....	16
Colleton.....	5	Saluda.....	4
Darlington.....	16	Spartanburg.....	14
Dorchester.....	3	Sumter.....	14
Edgefield.....	16	Union.....	7
Fairfield.....	11	Williamsburg.....	5
Florence.....	11	York.....	10
Greenville.....	13		
Greenwood.....	12	Total, S. C.....	435

BY STATES.

South Carolina.....	435	Florida.....	1
North Carolina.....	6	District of Columbia.....	1
Georgia.....	5		
Tennessee.....	1	Total.....	449

Postgraduate Students.....	21
Special Students.....	4
Regular Students.....	412
Irregular Students.....	19

456

Names inserted twice 7

Total..... 449

NOTE.—Owing to the change in the college year, the session of 1897–98 includes three terms; and therefore the foregoing register comprises the total attendance from February, 1897, to June, 1898.

Occupations of Parents and Guardians.

Farmers.....69	per cent.	Physicians..... 1	per cent.
Merchants..... 5	"	Drummers..... 1	"
Lawyers..... 4	"	Insurance Agents..... 1	"
Clerks..... 3	"	Contractors..... 1	"
Officers..... 2	"	Miscellaneous.....10	"
Manufacturers..... 2	"	—	"
Ministers..... 1	"	Total.....100	"

Church Affiliation.

Methodist..... 36 per cent	Christian..... 2 per cent
Baptist..... 30 “	Catholic..... 1 “
Presbyterian..... 11 “	Israelite..... 1 “
Episcopal..... 10 “	Unitarian..... 1 “
Lutheran..... 5 “	Universalist..... 1 “
Associate Reform Pres- byterian..... 2 “	Total.....100 “

Average Age.

The average age of students is 18 years.

ROSTER OF THE OFFICERS AND NON-COMMISSIONED OFFICERS OF THE CLEMSON CORPS OF CADETS.

COMMANDANT OF CADETS,

CAPTAIN EZRA B. FULLER, Seventh United States Cavalry.

FIRST BATTALION.

Companies "A" and "B."
MAJOR G. SHANKLIN.

SECOND BATTALION.
Companies "C" and "D."
MAJOR W. W. KLUGH.

COMMISSIONED STAFF.

Cadet Lieutenant and Adjutant.....THOS. H. TURNER.
Cadet Lieutenant and Quartermaster.....RALPH McLENDON.

NON-COMMISSIONED STAFF.

Cadet Sergeant Major.....J. F. Sullivan.
Cadet Quartermaster Sergeant.....W. D. George.
Cadet Color Sergeant.....C. E. Mauldin.
Cadet Drum Major.....J. N. Walker, Acting.
Cadet Sergeant of the Band.....B. H. Rawl.

RANK.	"A" Company.	"B" Company.	"C" Company.	"D" Company.	Artillery Detachm't and Signal Corps.
Captain.....	A. S. Shealy.....	J. C. Thomson....	I. B. Taylor.....	C. K. Chreitzberg .	J. C. Cheatham.
Lieutenants.....	J. S. Calhoun	M. L. Elder.....	L. A. Turnipseed.	C. H. Seigler.....	H. G. Smith.
	W. F. Walker....	W. N. Hook	A. P. Norris.....	T. S. Simpson.....	.....
1st. Sergeants.....	J. E. Caughman..	S. D. Pearman...	L. O. Mauldin....	S. E. Liles.....	.....
	J. B. Watkins.....	J. H. Kinsler.....	H. G. Epps.....	J. R. Donaldson...	J. W. Jeffares.
Sergeants.....	J. F. Etheredge..	J. B. Foster.....	F. A. Lawton....	C. H. Wells.....	.....
	R. S. Cannon	J. F. Maxwell....	W. G. Adams....	W. R. Smith.....	.....
	W. C. Forsythe..	T. A. Brookbanks	E. T. Hughes.....	J. N. Walker.....	.....
Corporals	R. G. Forsythe...	E. H. Pickett....	J. W. Gunby.....	J. C. Duckworth ..	.....
	W. L. Moise.....	G. F. Klugh.....	T. O. Lawton	H. R. Chreitzberg.	.....
	J. F. Harling	H. R. Tison	C. W. Mauldin...	H. L. Ramsey.....	.....
	J. R. Blakney....	C. B. Douglas....	J. H. Spencer....	J. B. Lewis.....	.....
	W. J. Lawton....	C. N. Sprott.....	C. J. Fickling....	F. I. Hayne.....	.....

REGISTER OF GRADUATES.

1896.

Name and Address.	Occupation.
B. M. Aull, Autun, S. C	With Pendleton Manufacturing Co.
J. M. Blaine, Clemson College, S. C . . .	{ Postgraduate student, Clemson Agricultural College.
G. P. Boulware, Newberry, S. C	Mercantile Clerk.
J. T. Bowen, Clemson College, S. C	{ Postgraduate student, Clemson Agricultural College.
J. T. Bradley, Augusta, Ga.	Lumbering.
J. F. Breazeale, Anderson, S. C	Teacher.
F. L. Bryant, Ithaca, N. Y.	Student, Cornell University.
P. N. Calhoun, Blairs, S. C	Teacher.
W. H. Carpenter, West Point, N. Y. . . .	Cadet, U. S. Military Academy.
A. M. Chreitzberg, Norfolk, Va.	With Southern Railway.
T. W. Cothran, Denison Texas.	Draftsman, U. S. Geological Survey.
D. Dowling, Bamberg, S. C	Bicycle Dealer.
E. P. Earle, Portman Shoals, S. C	{ Electrician, Anderson Light and Power Co.
J. F. Folk, Hartzog, S. C	Teacher.
C. M. Furman, Jr., Clemson College, S. C.	Librarian, Clemson Agr. College.
P. H. Gooding, Crockettville, S. C	Farmer and Merchant.
R. G. Hamilton, Shelton, S. C	Teacher.
G. W. Hart, Greenwood, S. C	Secretary S. C. Teachers' Agency.
J. E. Hunter, St. Lukes, S. C	Teacher.
W. W. Klugh, Clemson College, S. C .	Tutor, Clemson Agr. College.
P. G. Langley, Charleston, S. C	{ Electrician, Carolina Mutual Tel. & Tel. Co.
R. E. Lee, Clemson College, S. C	{ Assistant Instructor in Drawing, Clemson Agricultural College.
I. M. Mauldin, Pickens, S. C	Law Student.
J. H. Moore, Brownsville, S. C	Teacher.
T. S. Moorman, Columbia, S. C	Dairying.
O. M. Pegues, Kollock, S. C	Farmer.
B. F. Robertson, Port Royal, S. C	Chemist, Baldwin Fertilizer Co.
L. A. Sease, Lewiedale, S. C	Teacher.
J. G. Simpson, Miller School, Va.	{ Instructor in machine shop; Mil- ler School, Va.
B. F. Sloan, Charleston, S. C	Student, S. C. Medical College.
B. R. Tillman, Jr., Copes, S. C	Teacher.
A. J. Tindal, Felder, S. C	Farmer.
F. G. Tompkins, Columbia, S. C	Lawyer.
B. R. Turnipseed, Greenwood, S. C . . .	Merchant.
T. H. Tuten, Charleston, S. C	Student, S. C. Medical College.
W. W. Wardlaw, Sandover, S. C	Teacher.
L. A. Werts, Clemson College, S. C . . .	Tutor, Clemson Agricultural College

1898.

Name and Address.	Name and Address.
D. O. Browne. Anderson, S. C	G. A. Hanvey, Jr. Hunters, S. C
A. B. Bryan Barnwell, S. C	J. T. Hanvey. Hunters, S. C
J. S. Garis. Smoaks, S. C	D. H. Henry. Abbeville, S. C
C. W. Gentry. Spartanburg, S. C	J. H. Hook. Clemson College, S. C
R. T. Hallum. Liberty, S. C	J. A. McCrary. Autun, S. C

REGISTER OF GRADUATES—1898—Continued.

Name and Address.	Name and Address.
W. H. McFadden Smiths, S. C	R. L. Spencer Roddy, S. C
C. B. Mahaffey Knoxville, Tenn	G. H. Swygert Selwood, S. C
J. D. Maxwell Anderson, S. C	A. D. Talbert Parksville, S. C
J. P. Minus, Jr. St. George, S. C	T. R. Vogel Barnwell, S. C
P. W. Moore Simpsonville, S. C	T. J. Walker Denmark, S. C
D. F. Rogers Latta, S. C	G. Wiggins Holly Hill, S. C
W. J. Sarratt Gaffney, S. C	J. T. Wise Williston, S. C
J. B. Smith Branchville, S. C	

NOTE.—The first commencement was held in December, 1896. Then, owing to a change from winter to summer vacation, the next class graduated in February, 1898, and subsequent classes will graduate in June.

SECOND ANNUAL COMMENCEMENT.*

February 6, 7, 8, 9, 1898.

Program.

SUNDAY, 11 A. M.

Baccalaureate Sermon By Bishop W. W. DUNCAN.

S P. M.

Y. M. C. A. Address By President H. S. HARTZOG.

MONDAY.

A. M.

P. M.

Beginimental Review Entertainment by COLLEGE GLEE CLUB.

TUESDAY.

A. M.—Address to Graduating Class By Col. ROBERT ALDRICH.*

P. M.—Alumni Address By MR. I. M. MAULDIN, '96.

WEDNESDAY.

Commencement Day.

GRADUATING CLASS.

Name.	County.	Name.	County.
D. O. Browne	Anderson	J. P. Minus, Jr.	Dorchester
A. B. Bryan	Barnwell	P. W. Moore	Greenville
J. S. Garriss	Colleton	D. F. Rogers	Marion
C. W. Gentry	Spartanburg	W. J. Sarratt	Cherokee
R. T. Hallum	Pickens	J. B. Smith	Barnwell
G. A. Hanvey, Jr.	Abbeville	R. L. Spencer	York
J. T. Hanvey	Abbeville	G. H. Swygert	Lexington
D. H. Henry	Abbeville	A. D. Talbert	Edgefield
J. H. Hook	Orangeburg	T. R. Vogel	Barnwell
J. A. McCrary	Anderson	T. J. Walker	Bamberg
W. H. McFadden	Chester	G. Wiggins	Berkeley
C. B. Mahaffey	Anderson	J. T. Wise	Aiken
J. D. Maxwell	Anderson		

* Owing to illness, Col. Aldrich was unable to meet this appointment, and his place was ably filled by Bishop Duncan.

EXPERIMENT STATION.

BOARD OF FERTILIZER CONTROL.

HON. J. E. TINDAL.

HON. J. E. WANNAMAKER.
J. P. SMITH, Secretary.

GOV. W. H. ELLERBE.

OFFICERS OF EXPERIMENT STATION.

HENRY S. HARTZOG, President of College.....	Director
J. S. NEWMAN.....	Vice-Director and Agriculturist
M. B. HARDIN.....	Chief Chemist
F. S. SHIVER, PH. G.....	Assistant Chemist
J. F. C. DUPRE.....	Horticulturist
R. N. BRACKETT, PH. D.....	Assistant Chemist
J. W. HART.....	Dairyman
W. E. A. WYMAN, M. D. V., V. S.....	Veterinarian
JOHN THOMPSON, B. AGR.....	Assistant Chemist
A. P. ANDERSON, M. S., PH. D.....	Botanist and Bacteriologist
C. M. CONNOR, B. S., B. AGR.....	Assistant Agriculturist
J. V. LEWIS, B. E., S. B.....	Geologist
ERNEST WALKER, B. S.....	Entomologist and Assistant Horticulturist
JAS. P. LEWIS.....	Farm Foreman
J. S. PICKETT.....	Experiment Station Foreman
JOHN N. HOOK, Secretary and Librarian.	

Extracts from the "Hatch Act."

Extracts from the act of Congress, known as the "Hatch Act," approved March 2, 1887, for the establishment of Agricultural Experiment Stations in connection with Colleges established in the several States under the provisions of the Congressional Act, approved July 2, 1862; and known as the *first* "Morrill Bill."

SECTION I. * * * That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on the subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established under direction of the college or colleges or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July 2, 1862, entitled "An Act Donating Public Lands to the Several States and Territories which may Provide Colleges for the Benefit of Agriculture and the Mechanic Arts," or any of the supplements to said act, a department to be known and designated as an "Agricultural Experiment Station." * * *

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. * * * It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located, a full and detailed report of its operations, including a statement of receipts and expenditures. * * *

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore described, the sum of \$15,000 per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of Section 8 of this act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the Treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887, *provided, however*, that out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement or repair of a building or buildings necessary for carrying on the work of such station, and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

* * * * *

SEC. 7. That nothing in this act shall be construed to impair or modify the legal relation existing between any of said colleges and the Government of the States or Territories in which they are respectively located.

SEC. 8. * * * And in case any State shall have established under the provisions of said act of July 2 aforesaid an agricultural department or experiment station in connection with any university, college or institution not distinctively an agricultural college or school, and such state shall have established or shall hereafter establish a separate agricultural college or school, which shall have connected therewith an experimental farm or station, the Legislature of such State may apply, in whole or in part, the appropriation by this act made to such separate agricultural college or school, and no Legislature shall by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of money authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grant; *provided*, that payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of its Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this act shall be held or construed as binding the United States to continue any payments from the treasury to any or all the States or institutions mentioned in this act, but Congress may at any time amend, suspend or repeal any or all the provisions of this act.

Outline of Experiments for 1897.

HORTICULTURAL DIVISION.—Experiments were conducted with varieties of various species of vegetables, including potatoes, tomatoes, cucumbers, onions, okra, beans, squashes, carrots and table beets. Also on watermelons and cantaloupes.

Fertilizer tests of onions, potatoes and beets.

Comparison of production from seeds taken from different parts of the watermelon.

Test of cuttings from each end and from middle of Irish potatoes. Tests of whole, half, quarter and smaller sections of the Irish potato. Canning fruits and vegetables—making pickles and catsups.

Various tests on fungicides and insecticides on sundry plants and vegetables.

Variety tests of strawberries, egg plants, cabbages, cauliflower, sugar beets, English peas and pole beans.

Fertilizer tests as to yield of tomatoes, cabbages, dwarf beans, sugar and table beets.

Fertilizer tests as to per cent. of sugar in sugar beets.

Fertilizer tests as to liability to produce scab in potatoes and beets.

Fertilizer experiments as to starch content of potatoes.

Experiments (cooperative) with growing forest trees from seed from other stations.

Experiments with insecticides to rid orchard of hories.

AGRICULTURAL DIVISION.—Rotation of crops. Fertilizers on cotton. Thick and thin planting of corn on bottom land. Methods

of saving fodder on both bottom and upland. Methods of planting corn. Experiments with grasses and legumes sown singly and together. Experiments with varieties of wheat and varieties of non-sacharine sorghums.

DAIRY DIVISION.—Experiments with pig-feeding to test the value of skim milk for pork production.

Experiments with different methods of setting and churning milk.

A test of the efficiency of different milk separators in extracting the butter fat from the milk.

Numbers of Samples Analyzed, Free, for the Years 1896 and 1897.

STATE ANALYTICAL WORK.

The following is a summary of the work compared with that of last year :

	1896	1897
Official fertilizer samples.....	237	272
Farmers' fertilizer samples.....	42	44
Mineral and potable waters.....	75	95
Phosphate rocks.....		2
Ores and minerals.....	18	14
Marl.....	1	
Ashes.....	2	1
Clays and sand.....	3	4
Miscellaneous.....	1	3
	379	435

OFFICIAL SAMPLES OF FERTILIZERS.

CLASSIFICATION.

	1896	1897
Nitrogenous superphosphates and fertilizers.	115	117
Acid phosphates.....	42	59
Acid phosphates with potash.....	26	34
Kainit.....	16	22
Cotton seed meal.....	34	40
Miscellaneous.....	4	
	237	272

Bulletins Issued 1897.

Hog Cholera and Swine Plague, by W. E. A. Wyman.
 Protection and Improvement of Worn Soils, by J. S. Newman.
 Analyses of Commercial Fertilizers, by M. B. Hardin.
 Sweet Potato as a Starch Producer, by F. S. Shiver.
 Wounds and Their Treatment, by W. E. A. Wyman.
 Determination of Starch in the Sweet Potato, by F. S. Shiver.
 Analyses of Commercial Fertilizers, by M. B. Hardin.
 Distemper in Horses and Mules, by W. E. A. Wyman.

Clemson College Directory.

CLEMSON AGRICULTURAL COLLEGE.

H. S. HARTZOG, President.

P. H. E. SLOAN, Sec'y and Treas.

CALHOUN LITERARY SOCIETY.

L. A. TURNIPSEED, President.

W. C. FORSYTHE, Secretary.

COLUMBIAN LITERARY SOCIETY.

R. McLENDON, President.

E. T. HUGHES, Secretary.

PALMETTO LITERARY SOCIETY.

B. H. RAWL, President.

I. N. WALKER, Secretary.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

CECIL H. SEIGLER, President.

J. C. CHEATHAM, Secretary.

SUNDAY SCHOOL.

J. V. LEWIS, Supt.

I. B. TAYLOR, Sec'y, and Treas.

CLEMSON COLLEGE SCIENTIFIC ASSOCIATION.

M. B. HARDIN, President.

E. WALKER, Secretary.

ATHELETIC ASSOCIATION.

W. M. RIGGS, President.

J. F. SULLIVAN, Secretary.

FOOT BALL ASSOCIATION.

W. M. RIGGS, President.

J. F. SULLIVAN, Mgr.

A. S. SHEALY, Capt. Team '98.

CLEMSON COLLEGE GLEE CLUB.

W. M. RIGGS, President

J. F. SULLIVAN, Manager.

D. H. HENRY, Sec'y.

TENNIS CLUB.

C. M. FURMAN, JR., President.

J. CROCKATT THOMSON, Secretary.

BASE BALL ASSOCIATION.

J. M. BLAIN, Manager.

T. C. SHAW, Captain.

ALUMNI ASSOCIATION.

T. H. TUTEN, President.

W. W. KLUGH, JR., Secretary.

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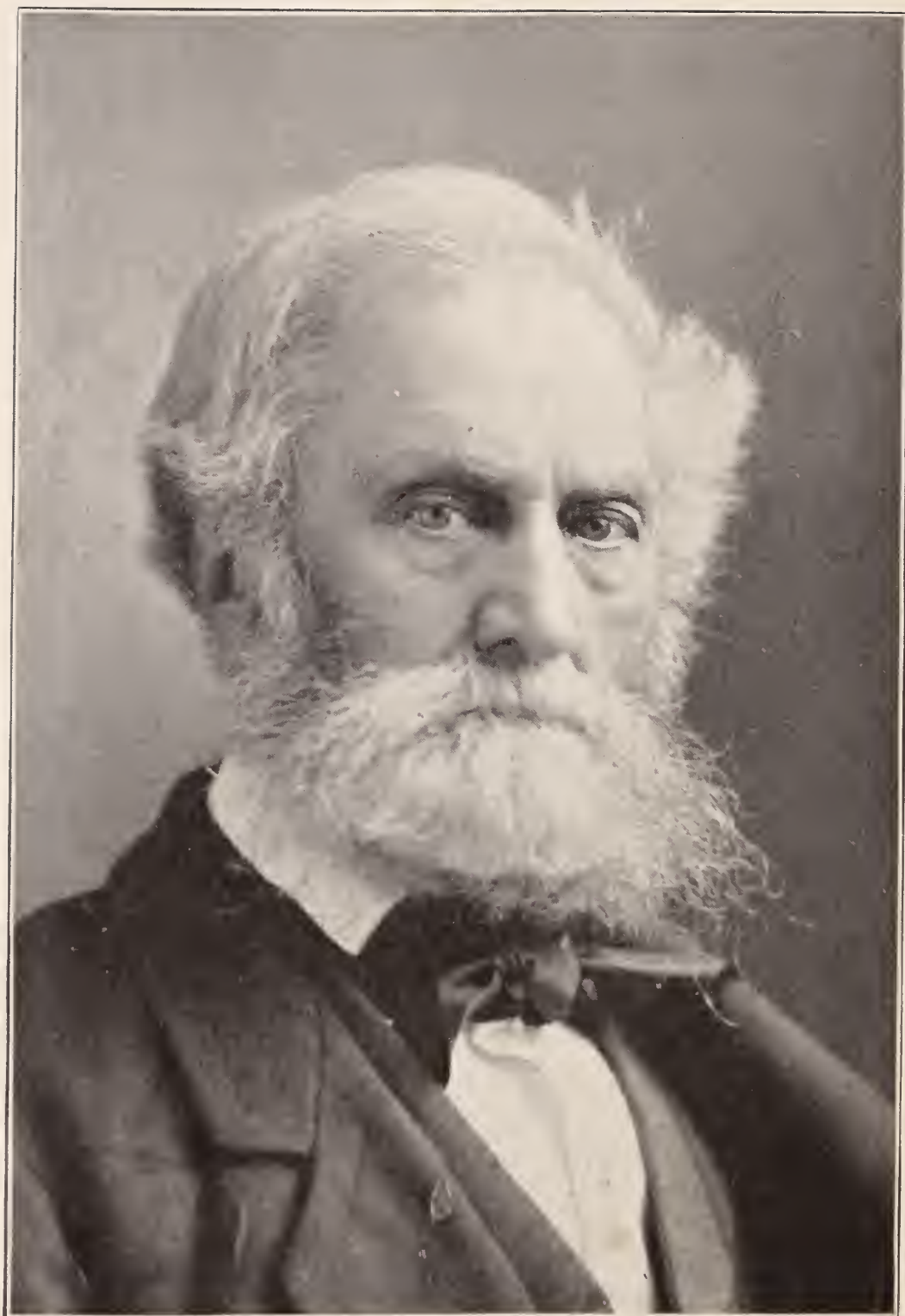
Clemson College, S. C.

CLEMSON COLLEGE CHRONICLE.

J. CROCKATT THOMSON, Editor-in-Chief.

J. FRANCIS SULLIVAN, Business Manager.





THOMAS G. CLEMSON.

Clemson College
General information

Circular of Information

No. 5.

(5)

CLEMSON COLLEGE,

AGRICULTURAL AND MECHANICAL.

HENRY S. HARTZOG, PRESIDENT.

P. H. E. SLOAN, SEC. AND TREAS.

Post Office, Clemson College, S. C.

Express and Freight Office, Calhoun, S. C.

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Gov. W. H. ELLERBE.....	Columbia.
DR. P. H. E. SLOAN, SEC'Y AND TREAS., Clemson College.	

FACULTY.

HENRY S. HARTZOG* (S. C. Mil. Acad., Sou. Bap. Theol. Sem.)	President.
M. B. HARDIN (Virginia Military Institute.)	Professor of Chemistry.
J. S. NEWMAN (University of Virginia.)	Professor of Agriculture.

WILLIAM H. POEHM (B. S., Rose Polytechnic Inst ; M. M. E., Cornell Univ.)

Professor of Mechanical and Electrical Engineering.

C. M. FURMAN (A. B., Furman University.)

Professor of English.

W. S. MORRISON (A. B., Wofford College.)

Professor of History.

G. SHANKLIN (South Carolina Military Academy.)

Acting Professor of Military Science and Tactics.

J. H. M. BEATY (South Carolina College.)

Professor of Textile Engineering.

J. G. CLINKSCALES (A. M., Wofford College.)

Professor of Mathematics.

J. V. LEWIS (B. E., Univ. of N. C.; S. B., Harvard Univ.;

Special Course Johns Hopkins Univ.)

Professor of Geology.

R. N. BRACKETT (A. B., Davidson College; Ph. D., Johns Hopkins Univ.)

Assistant Professor of Chemistry.

P. T. BRODIE (B. S., A. B., Furman Univ.; Special Course Univ. of Va.)

Assistant Professor of Mathematics.

[And Instructor in Civil Engineering.]

*D. WISTAR DANIEL (A. B., Wofford College.)

Assistant Professor of English.

J. F. C. DUPRE,

Assistant Professor of Agriculture and Horticulturist.

C. M. CONNER (B. Agr., Univ. of Mo.; B. S., Michigan Agr. College.)

Assistant Professor of Agriculture.

A. M. REDFEARN (Furman Univ.; B. S., Wake Forest, Col.;

M. D., Long Island College Hospital; Special Courses N. Y. Post-grad. Med. School; New Orleans Polyclinic.)

Instructor of Physiology.

CHARLES HANCOCK (Miller School, Va.; University of Va.)

Instructor in Drawing and Mechanical Designing.

*In place of Prof. J. S. McLucas, who is absent on leave for one year.

F. S. SHIVER (Ph. G., University of South Carolina.)
Assistant Chemist.

R. T. V. BOWMAN (Miller School, Va.; Special Course
Univ. of Va.)

Instructor in Forge and Foundry. .

G. E. NESOM (B. S., Miss. Agr. College; V. S., Iowa Agr.
College.)

Instructor in Veterinary Science.

W. M. RIGGS (B. S., E. and M. E., Ala. Polytech. Inst.;
Special Course Cornell Univ.)

Instructor in Electricity.

[And in Charge of Electrical Laboratories.]

ALBERT BARNES (Univ. State of N. Y.; M. E., Cornell
Univ.)

Instructor in Woodwork.

[And in Charge of Mechanical Laboratory.]

A. P. ANDERSON (M. S., Univ of Minn.; Ph. D., Univ. of
Munich)

Botanist.

T. G. POATS (Miller School Va.; University of Virginia.)
Instructor in Physics and Machine Shop.

E. WALKER (De Pauw Univ.; B. S. Cornell Univ.)
Entomologist and Assistant Horticulturist.

R. E. LEE (B. S., Clemson Agr. College.)
Assistant Instructor in Drawing.

W. W. KLUGH (B. S., Clemson Agr. College.)
Tutor.

SAMUEL MANER MARTIN (S. C. Military Acad.; Special
Course Columbian University.)
Tutor.

Object.

The object of the College, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and applications of the sciences bearing upon agriculture and mechanics; and to give the breadth and culture necessary for a rounded education, liberal courses are provided in history, economics and English.

It is considered of the utmost importance that students be taught, not only theoretical methods, but practical work in these methods. To this end, as much time is devoted to laboratory and shop work, field instruction, and other practical exercises, as to lectures and recitations.

Location.

The College is located on the dividing line between Oconee and Pickens counties, in the picturesque foot hills of the Blue Ridge mountains. It has an elevation of about 900 feet above sea level, and commands an excellent view of the mountains to the north and west, some of which attain an altitude of nearly 5,000 feet. The climate is invigorating and healthful and the surroundings are in every way favorable to the highest physical and mental development. The buildings are located on the old Fort Hill homestead of John C. Calhoun.

The College is one mile from Calhoun, a station on the main line of the Southern Railway, and two miles from Cherry's, on the Blue Ridge Railroad. By means of these roads and their connections, the College is easily accessible from all parts of the State. It is also connected by

telephone with Calhoun and Pendleton, and thence by telegraph with all parts of the country. The post office is conveniently situated on the campus, and receives five daily mails.

Tuition.

Free tuition will be given to the residents of South Carolina when the following certificate is properly signed and filed :

Certificate of Inability to Pay Tuition.

This is to Certify, That I am unable to pay
tuition for my _____
in the Clemson Agricultural College for the
session of 1898-99.

Father or Guardian.

I hereby certify that, to the best of my
knowledge and belief, the above statement is
true.

County Auditor.

All other students pay a tuition fee of \$40.00 per session.

Blank certificates will be furnished upon application to the President.

Expenses.

The next session of the College will begin September 14th, 1898, and close June 14th, 1899.

Expenses for this session of nine months will be as follows:

Incidental Fee.	\$ 5 00
Medical Fee.....	5 00
Uniform.....	22 30
Board and Washing	67 50
Total for Free-Tuition Students..	\$99 80
Tuition.....	40 00

Total for Tuition-paying students,\$139 80

The session is divided into two terms of two quarters each, beginning as follows:

September 14th, 1898.

November 21st, 1898.

January 28th, 1899.

April 6th, 1899.

Payments must be made promptly at the beginning of each quarter. On the day of entrance each student must make the following payments:

Incidental Fee.....	\$ 5 00
Medical Fee	5 00
Uniform.....	22 30
Board and Washing for one quarter...	16 88
Total for Free-tuition Students....	\$49 18
Tuition	10 00

Total for Tuition-paying Students...59 18

At the beginning of each succeeding quarter the payments are:

For Free-tuition Students\$16 88

For Tuition-paying Students 26 88

Uniform includes dress coat, blouse, trousers, cap, and pompon. The price is subject to fluctuations of the market.

The above includes all College expenses except the cost of books and stationery, which may be obtained at the Cadet Exchange at wholesale prices, and \$1.50 for diploma, payable on graduation.

Students who join the literary societies pay a small initiation fee and monthly dues of a few cents.

A deduction will be made from cost of board and washing when a student is absent for one month or more.

For students who enter late in the session a proportional deduction will be made from cost of board, washing, and tuition. No deduction will be made, however, from medical fee or incidental fee.

Remittances should be made in cash, money order, or New York Exchange, but *not by local checks*, to P. H. E. SLOAN, Treasurer, Clemson College, S. C.

The Session.

The present session began September 14th, 1898, and will continue without vacation till June 14th, 1899. The second term begins January 28th, 1899.

Students may enter at any time, but it is greatly to their advantage to be present early in the session. Those who enter at the beginning of the second term are required to pass approved examinations upon the work completed by the class during the first term.

Requirements.

Each candidate for admission must be at least fifteen years of age, except where two brothers apply, one being over fifteen and the other not under fourteen.

Matriculation is equivalent to a pledge to conform to the rules and regulations of the College.

Certificates of good moral character are required of all candidates for admission not known to members of the faculty; and, if the candidate comes from another college, this certificate must show that he was honorably discharged.

For admission into the freshman class thorough proficiency is required in arithmetic, elementary algebra, English grammar, geography, and history of the United States. The textbooks recommended to those preparing to enter the freshman class are Wells' Academic Arithmetic, Wentworth's Algebra, Whitney-Lockwood English Grammar, Redway and Hinman's Natural Advanced Geography, Eggleston's History of the United States and Its People.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption, or other contagious or communicable diseases, or permanent disability for manual labor or military duty.

All students are required to pursue regular courses, except when granted special permission by the faculty to take irregular courses.

Students in any class who fail to pass on more than one subject will not be promoted, and no student will be promoted to the senior class till all deficiencies are made up.

Students are required to make up all class work from which they have been absent for any cause except military duty.

All regular students are required to board in the institution except those who live with their parents near enough to attend from their homes.

The government is military, and each student is required to purchase the prescribed uniform.

Students may provide themselves with such work clothes as they desire.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow, and two pillow cases. Beds are single width.

Organization.

For purposes of instruction the College is organized into six departments, as follows:

1. Agricultural Department
2. Mechanical Department
3. Department of Chemistry and Natural Science
4. Literary Department
5. Military Department
6. Textile Department

Each department is presided over by a professor designated by the Board of Trustees as Head of Department, who in addition to teaching, exercises a general supervision over the work of the department. The divisions of each department are in the immediate charge of special instructors.

The Agricultural department comprises the following divisions: General Agriculture, including Animal Husbandry; Horticulture; Entomology; Botany; Dairying; Veterinary Science; Poultry Raising.

The Mechanical department comprises the divisions of Applied Mechanics, including Experimental Engineering; Physics; Electrical Engineering; Drawing and Designing; Forge and Foundry; Machine Shop; Wood Work.

The Department of Chemistry and Natural Science includes Chemistry, general, industrial, agricultural and analytical; Geology and Mineralogy.

The Literary department comprises the courses in pure Mathematics, Civil Engineering, English and History.

The Military department comprises theoretical and practical instruction in Military Science and Tactics.

The Textile department comprises the course in Textile Engineering.

Courses of Study.

There are three full courses of study—agricultural, mechanical, and textile. All regular students in the freshman class pursue the same studies. The mechanical and textile courses are also the same in the sophomore year. Students pursuing the mechanical course choose between electrical engineering and civil engineering in the junior and senior years.

Upon the completion of one of these courses the student is awarded a diploma conferring the degree of Bachelor of Science (B. S.)

Graduates of the mechanical course of Clemson College and of equivalent courses in other institutions may complete the textile course in one year.

AGRICULTURAL COURSE.

Freshman Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics	5	5
English	5	5
History	5	1
Agriculture	0	4
PRACTICAL.		
Wood Work	4	4
Mechanical Drawing	2	2
Free-Hand Drawing	3	3
Forge Work	4	4
Drill	2	2

Sophomore Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics	5	5
English	3	3
Chemistry	3	3
Agriculture and Stock Breeding	2	0
Horticulture	2	0
Botany	0	2
Dairying	0	1
Entomology	0	1
PRACTICAL.		
Chemical Laboratory	4	4
Surveying, Field Work	2	0
Agriculture and Stock Breeding	2	2
Horticulture	2	2
Dairying	2	0
Entomology }	1	3
Botany }		
Mineralogy	0	2
Drill	2	2

Junior Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
English.....	2	2
History.....	4	0
Chemistry.....	2	2
Military Science.....	1	1
Dairying.....	2	0
Botany.....	0	2
Horticulture.....	0	2
Entomology.....	0	2
Veterinary Science.....	2	4
Agriculture.....	2	0
PRACTICAL.		
Chemical Laboratory.....	6	6
Agriculture and Stock Breeding.....	2	2
Horticulture.....	2	2
Dairying.	2	0
Entomology }	1	3
Botany }		
Drill.	2	2

Senior Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
English.	2	2
History.....	2	2
Chemistry.....	2	2
Geology.....	3	3
Agriculture.	2	2
Veterinary Science.....	1	1
Botany	2	0
Entomology.....	0	2
Military Science.....	1	1

SENIOR CLASS CONTINUED.

PRACTICAL.	Hours per Week.	
	1st Term.	2d Term.
Chemical Laboratory.. . . .	6	6
Veterinary Science.....	3	3
Dairying	2	0
Agriculture	0	2
Botany...	2	0
Horticulture	0	2
Drill...	2	2

MECHANICAL COURSE.

Freshman Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics.	5	5
English	5	5
History	5	1
Agriculture.....	0	4
PRACTICAL.		
Wood Work	4	4
Mechanical Drawing.....	2	2
Free Hand Drawing.....	3	3
Forge Work	4	4
Drill	2	2

Sophomore Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics	5	5
English	3	3
Descriptive Geometry	2	0
Chemistry.	3	3*
Natural Philosophy.....	0	2
History	2	2

*Second Term—Chemistry first half, Descriptive Geometry second half.

SOPHOMORE CLASS CONTINUED.

PRACTICAL.	Hours per Week.	
	1st Term.	2d Term.
Wood Work.....	2	2
Mechanical Drawing	2	2
Foundry	5	5
Chemical Laboratory.....	4	4†
Drill.....	2	2

†Second Term—Chemical Laboratory first half, Mechanical Drawing second half.

Junior Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics.	5	5
Physics	2	2
Electrical Engineering } Or Civil Engineering }	3	3
Mechanics.....	2	2
English.....	2	2
Military Science.....	1	1
PRACTICAL.		
Machine Shop.....	5	4
Mechanical Drawing and Designing.	4	3
Electrical Laboratory, or Civil Engineering, Field Work.	4	4
Mechanical Laboratory.....	0	2
Drill.....	2	2

Senior Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mechanical Engineering ...	2	2
Electrical Engineering {	5	5
Or Civil Engineering }		
Applied Mechanics	3	3
History.....	2	2
English.....	2	2
Military Science.....	1	1
PRACTICAL.		
Shop Work.....	5	5
Mechanical Drawing.....	2	2
Electrical Laboratory, or Civil Engineering, Field Work.....	4	4
Mechanical Laboratory.....	2	2
Drill.....	2	2

TEXTILE COURSE.

Freshman Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics ...	5	5
English.....	5	5
History.....	5	1
Agriculture ..	0	4
PRAETICAL		
Wood Work.....	4	4
Mechanical Drawing.....	2	2
Free Hand Drawing.....	3	3
Forge Work.....	4	4
Drill.....	2	2

Sophomore Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics....	5	5
English....	3	3
Descriptive Geometry....	2	0
Chemistry....	3	3*
Natural Philosophy....	0	2
History....	2	2

*Second Term—Chemistry first half, Descriptive Geometry second half.

PRACTICAL.		
Wood Work....	2	2
Mechanical Drawing....	2	2
Foundry....	5	5
Chemical Laboratory....	4	4†
Drill....	2	2

†Second Term—Chemical Laboratory first half, Mechanical Drawing second half.

Junior Class.

THEORETICAL.	Hours per Week.	
	1st Term.	2d Term.
Mathematics....	5	5
Physics....	2	2
Textile Engineering....	5	5
English....	2	2
Military Science....	1	1
PRACTICAL.		
Machine Shop....	5	4
Mechanical Drawing and Designing....	4	3
Textile Engineering....	6	6
Drill....	2	2

Senior Class.

	Hours per Week.	
	1st Term.	2d Term.
THEORETICAL.		
Textile Engineering... ..	8	8
History... ..	2	2
English... ..	2	2
Military Science... ..	1	1
PRACTICAL.		
Shop Work... ..	5	5
Mechanical Drawing... ..	2	2
Textile Engineering... ..	8	8
Drill... ..	2	2

Sub-Freshman Course.

A sub-freshman course is provided for students not prepared to enter the freshman class. In addition to instruction in the usual preparatory branches, the elements of agriculture, mechanic arts, and military drill are also included in this course. The work is thus more closely articulated with the instruction in the advanced classes than that given in other preparatory institutions.

Special Courses.

Graduates of this and other institutions, or other mature young men of earnest purposes, who desire to pursue special lines of work will be given every opportunity that the College affords, upon satisfying the faculty that they are qualified to undertake such courses to advantage. Students thus admitted are expected to apply themselves assiduously, and with the approval of the faculty, may board outside of the institution.

Irregular Courses.

Students are earnestly advised to pursue regular courses; but those who for satisfactory reasons are unable to do so, may, upon the approval of the faculty, pursue irregular courses. No student whose time is not fully occupied will be permitted to remain at the College. Diplomas are not issued to irregular students.

Reports.

Monthly reports are furnished to parents and guardians, giving the standing of students in all studies and in discipline. Reports are also issued at the end of each term, showing the grades, based upon class work and examinations, in all studies. Parents will be advised to withdraw students who habitually shirk duties.

Experiment Station.

The State Experiment Station occupies a portion of the College farm, and affords valuable opportunities for instruction in the various divisions of the Agricultural department.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investigation being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom.

Student Labor.

Considerable manual labor is necessary to carry on the agricultural and mechanical departments of the College. Students who desire it are employed in this work, when practicable, and are paid for it at the rate of eight cents an hour; but no student is allowed to undertake work that interferes with his College course. Some needy students are thus enabled to pay

part of their College expenses. The demand for such labor always exceeds the supply, and the College assumes no obligation to furnish employment for wages. Students entering late are at a special disadvantage in securing this work.

Religious Influences.

Every effort is made to surround the students with safe religious influences. There is preaching in Memorial Hall every Sunday morning by ministers of the different denominations, and chapel services are conducted every morning by the President assisted by other members of the faculty. All students attend these services. A Sunday School also meets every Sunday morning and the Young Men's Christian Association every Sunday evening in Memorial Hall. Both are well attended and are exercising a growing influence for good.

Care of the Sick.

The College Surgeon has instructions to keep parents fully informed of the condition of sick students. In case of serious illness parents will be notified by telegraph.

Students have permission to call on the Surgeon at any time for advice and treatment. The Surgeon cannot undertake to notify parents every time a student reports to the hospital for medicine or rest on account of some slight complaint; but parents may rest assured that they will hear from the Surgeon promptly in case of sickness of any consequence.

The health record for the past year and for the present session thus far has been exceptionally good. Many sanitary improvements have been made to insure the continued health of the students.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.

Assignment of Rooms.

Not more than three students are permitted to occupy the same room. The greatest possible care is exercised in placing students together. Those occupying a room are consulted before another student is assigned to that room. There the responsibility of the College ceases. A student not satisfied with his room-mates has the privilege of applying for permission to move to another room, and such applications are granted when practicable.

Athletics.

It is the policy of the College to sanction and encourage manly athletics so long as studies and other duties are not interfered with. Class records show that, as a rule, students engaged in College athletics do as well in their classes as those who are not. Should future experience reverse these records athletic sports will be restricted or prohibited altogether.

The most popular games this year are baseball and foot-ball. It is assumed that parents are willing for their sons to participate in these games unless the President is definitely notified to the contrary. The athletic teams will be permitted to take a few trips each season, usually on Saturdays, to play inter-collegiate games. Parents must file written permission for these trips.

For further information address

PRESIDENT HARTZOG,

CLEMSON COLLEGE, S. C.



WALHALLA, S. C.:

KEOWEE COURIER JOB PRINT.

1898.





CLEMSON COLLEGE

OF

SOUTH CAROLINA

AGRICULTURAL, MECHANICAL, TEXTILE

CATALOGUE 1898-99

SIXTH YEAR



ATLANTA, GA.:
THE FOOTE & DAVIES COMPANY,
PRINTERS AND BINDERS.
1899.

COLLEGE CALENDAR.

Session 1899-1900.

Session begins Wednesday, September 13, 1899.

Second Quarter begins Tuesday, November 21, 1899.

Thanksgiving Day, Thursday, November 30, 1899.

Christmas Day, Monday, December 25, 1899.

Second Term (Third Quarter) begins Monday, Jan. 29, 1900.

Washington's Birthday, Thursday, February 22, 1900.

Fourth Quarter begins Friday, April 6, 1900.

Session ends, Commencement, June 7-10, 1900.

OFFICIAL TITLE.

THE CLEMSON AGRICULTURAL COLLEGE
OF SOUTH CAROLINA.

Postoffice and Telegraph Office: CLEMSON COLLEGE, S. C.

Freight and Express Office: CALHOUN (Southern R'y), S. C.

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BOARD OF TRUSTEES.

Life Members.

NAME.	COUNTY.
HON. R. W. SIMPSON, PRESIDENT,	Anderson
SENATOR B. R. TILLMAN,	Edgefield
HON. R. E. BOWEN,	Pickens
HON. D. K. NORRIS,	Anderson
HON. J. E. BRADLEY,	Abbeville
HON. M. L. DONALDSON,	Greenville
HON. J. E. WANNAMAKER,	Orangeburg

Term Expires 1900.

HON. J. E. TINDAL,	Clarendon
HON. D. T. REDFEARN,	Chesterfield
HON. JESSE H. HARDIN,	Chester

Term Expires 1902.

HON. W. H. MAULDIN,	Hampton
HON. H. M. STACKHOUSE,	Marlboro
*GOVERNOR W. H. ELLERBE,	Marion

P. H. E. SLOAN, SEC. AND TREAS., Clemson College, S. C.

EXECUTIVE COMMITTEE.

D. K. NORRIS,	J. E. TINDAL,	H. M. STACKHOUSE,
R. E. BOWEN,	J. E. BRADLEY.	

FINANCE COMMITTEE.

R. W. SIMPSON,	W. H. MAULDIN,	M. L. DONALDSON.
----------------	----------------	------------------

*Died June 2, 1899.

BOARD OF VISITORS 1898-99.

First District—HON. J. C. HEMPHILL, Charleston.

Second District—HON. ROBERT ALDRICH, Barnwell.

Third District—HON. J. H. MORROH, Abbeville.

Fourth District—HON. J. D. M. SHAW, High Point.

Fifth District—HON. J. L. GLENN, Chester.

Sixth District—HON. JOSEPH CANTEY, Summerton.

Seventh District—HON. T. M. RAYSOR, Orangeburg.

FACULTY.

(In order of appointment, except the President.)

HENRY S. HARTZOG (S. C. Military Academy; Sou. Bap. Theo. Sem.;
LL.D., Mercer University),

President.

M. B. HARDIN (Virginia Military Institute),

Professor of Chemistry.

C. M. FURMAN (A.B., Furman University),

Professor of English.

W. S. MORRISON (A.B., Wofford College),

Professor of History.

J. G. CLINKSCALES (A.M., Wofford College),

Professor of Mathematics.

J. V. LEWIS (B.E., University of N. C.; S.B., Harvard; Johns Hopkins),

Professor of Geology.

J. S. NEWMAN (University of Virginia),

Professor of Agriculture.

WILLIAM H. BOEHM (B.S., Rose Polytechnic Institute; M.M.E., Cornell),

Professor of Mechanical and Electrical Engineering.

G. SHANKLIN (South Carolina Military Academy),

Acting Professor of Military Science and Tactics.

J. H. M. BEATY (South Carolina College),

Professor of Textile Industry.

R. N. BRACKETT (A.B., Davidson College; Ph.D., Johns Hopkins),

Assistant Professor of Chemistry.

P. T. BRODIE (B.S., A.B., Furman University; University of Virginia),

Assistant Professor of Mathematics.

(And Instructor in Civil Engineering.)

*J. S. McLUCAS (A.B., South Carolina College; A.B., A.M., Harvard),

Assistant Professor of English.

J. F. C. DUPRE,

Assistant Professor of Agriculture and Horticulturist.

C. M. CONNER (B.Agr., Univ. of Missouri; B.S., Mich. Agr. College),

Assistant Professor of Agriculture.

*Absent on leave 1898-99, during which time his place was filled by Professor D. Wistar Daniel.

A. M. REDFEARN (Furman University; B.S., Wake Forest Col.; M.D., L. I. College Hospital; N. Y. Postgraduate; New Orleans Polyclinic),

Instructor in Physiology.

†R. T. V. BOWMAN (Miller School, Virginia; University of Virginia).

Instructor in Forge and Foundry.

F. S. SHIVER (Ph.G., University of South Carolina),

Instructor in Agricultural Analysis.

ALBERT BARNES (Univ. State of New York; M.E., M.M.E., Cornell),

Instructor in Woodwork.

W. M. RIGGS (B.S., E. and M.E., Alabama Polytech. Inst.; Cornell),

Instructor in Electricity.

(And in Charge of Electrical Laboratories.)

A. P. ANDERSON (M.S., Univ. of Minnesota; Ph.D., Univ. of Munich),

Instructor in Botany.

T. G. POATS (Miller School, Virginia; University of Virginia),

Instructor in Physics and Machine Shop.

E. WALKER (De Pauw University; B.S., Cornell University),

Instructor in Entomology and Assistant Horticulturist.

CHARLES HANCOCK (Miller School, Virginia; University of Virginia),

Instructor in Drawing.

G. E. NESOM (B.Sc., Mississippi Agricultural and Mechanical College; D.V.M., Iowa State Veterinary College),

Instructor in Veterinary Science.

R. E. LEE (B.S., Clemson College; Zanerian Art College),

Assistant Instructor in Drawing.

W. W. KLUGH (B.S., Clemson College; Vanderbilt University),

Instructor in Subfreshman Division.

SAMUEL MANER MARTIN (S. C. Military Academy; Columbian Univ.),

Instructor in Subfreshman Division.

D. WISTAR DANIEL (A.B., Wofford College),

Instructor in Subfreshman Division.

†Died April 14, 1899.



CORPS OF CADETS.

OFFICERS OF ADMINISTRATION.

HENRY S. HARTZOG,

President.

M. B. HARDIN,

Head of Department of Chemistry and Natural Science.

J. S. NEWMAN,

Head of Agricultural Department.

WILLIAM H. BOEHM,

Head of Mechanical Department.

J. H. M. BEATY,

Head of Textile Department.

G. SHANKLIN,

Acting Commandant.

P. H. E. SLOAN,

Treasurer and Purchasing Agent.

BOARD OF HEALTH.

HENRY S. HARTZOG,

President.

DR. A. M. REDFEARN,

Surgeon.

DR. P. H. E. SLOAN,

PROF. M. B. HARDIN,

PROF. J. S. NEWMAN.

R. T. V. BOWMAN,
INSTRUCTOR IN FORGE AND FOUNDRY WORK,
1894 to 1899.

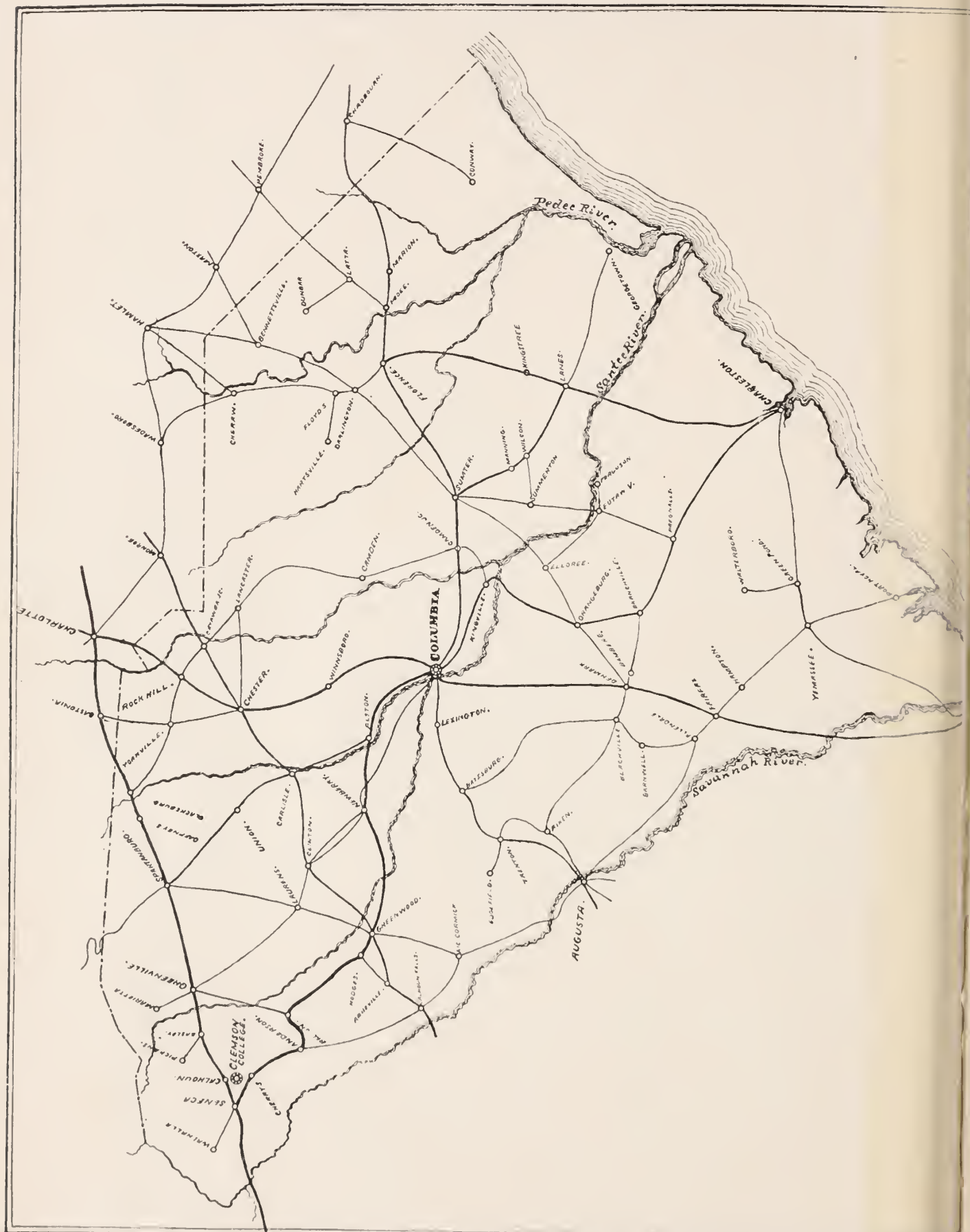
Resolutions Adopted by the Faculty.

WHEREAS, It has pleased God to remove by death our associate, Mr. R. T. V. Bowman,

Be it resolved, That we heartily deplore the death of our friend and colleague, thus cut down in the flower of his manhood.

That we cheerfully testify to his diligence, faithfulness, and efficiency as a teacher; and that we extend to the members of his family the assurance of our warm sympathy with them in their great affliction.

Resolved further, That a copy of these resolutions be sent to the family of our lamented associate; that they be inserted in the daily newspapers of the State, and in the *Chronicle* of Charlottesville, Virginia; and that a page of our minute-book be inscribed to his memory.



RAILROAD MAP OF SOUTH CAROLINA.

GENERAL INFORMATION.

Origin and Objects.

In 1886 a convention of the farmers of South Carolina passed a resolution advocating the establishment of an Agricultural College. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who died in 1888, leaving as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and about \$80,000 in other securities, for the purpose of establishing an Agricultural College.

The Legislature passed an act which became a law in November, 1889, accepting the bequest. The College opened July 6, 1893, with an enrollment during its first session of 446 students.

The object of the College, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and applications of the sciences bearing upon agriculture and mechanics; and to give the breadth and culture necessary for a rounded education, courses are provided in history, economics and English.

It is considered of the utmost importance that students be taught, not only theoretical methods, but practical work in these methods. To this end, as much time is devoted to laboratory, and shop-work, field-instruction, and other practical exercises, as to lectures and recitations.

Location.

The College is located on the dividing line between Oconee and Pickens counties, in the picturesque foot-hills of the Blue Ridge. It has an elevation of about 900 feet above sea-level, and commands an excellent view of the mountains to the north and west, some of which attain an altitude of nearly 5,000 feet. The climate is invigorating and healthful and the surroundings are in every way favorable to the highest physical and mental development. The buildings are located on the old Fort Hill homestead of John C. Calhoun.

The College is one mile from Calhoun, a station on the main line of the Southern Railway, and two miles from Cherrys, on the Blue Ridge Railroad. By means of these roads and their connections, the College is easily accessible from all parts of the State, as shown by the accompanying railroad map. It is also connected by telephone with Calhoun and Pendleton, and thence by telegraph with all parts of the country. The post-office is conveniently situated on the campus, and receives five daily mails.

College Grounds and Buildings.

GROUNDS.—The College grounds occupy about two hundred acres of land, including the campus, sites of buildings and residences, and grounds for military drill and outdoor athletics. The campus is laid out in walks, drives and lawns, and is shaded by a beautiful grove of native forest trees.

In memory of the lamented R. T. V. Bowman, late instructor in forge and foundry work, the new athletic and parade grounds have been named "Bowman Field."

The principal buildings of the College are heated by steam, lighted by electricity, and supplied with water connections for laboratory use and for protection against fire.

AGRICULTURAL HALL is a three-story brick structure, 130x140 feet, trimmed with gray sandstone. It contains twenty-two rooms, including recitation-rooms, library and reading-room, literary society halls, laboratories for botany, entomology, physics and mineralogy, besides the offices of the President, the Commandant and the Secretary and Treasurer. Adjoining this building is Memorial Hall, the College chapel, which has a seating capacity of 1,000. It is used for religious services and as an assembly-room.

THE MECHANICAL BUILDING is a substantial brick structure of liberal dimensions, containing about 30,000 square feet of floor space. On the first floor are the mechanical laboratory, the dynamo-laboratory, machine-shop, forge-shop, foundry, and the power and light station; on the second floor are the offices and recitation-room, while the wood-shop occupies the whole of a two-story wing 45x100 feet. The third floor is entirely occupied by the division of drawing.

THE CHEMICAL LABORATORY is a two-story brick building, fifty by eighty feet, covered with slate, and finished inside with Southern pine. On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, one is a balance-room for students, one an office, and one is fitted up as a laboratory for advanced students. The basement is used for assaying and for storage. On the second floor there are five rooms: qualitative laboratory, 36x48 feet, with a pitch of seventeen feet in the clear, lecture-room, professor's laboratory, an office, and a room for gas-analysis.

THE TEXTILE BUILDING is a two-story brick structure of modern cotton-mill design, protected from fire by automatic sprinklers and a 10,000-gallon water-tank in the tower. The first floor is occupied by recitation-rooms, carding- and spinning-rooms, and office. On the second floor are the dyeing and weaving departments.



CAMPUS VIEW NEAR PRESIDENT'S RESIDENCE.



THE CADET BARRACKS is a three-story brick building containing 148 rooms for students, a dining-hall 134x44 feet, and a kitchen 50x37 feet. The building is heated by steam and lighted by electricity, and has an abundant supply of pure spring-water.

The rooms in barracks are furnished with single-width iron cots, mattresses, tables, chairs, wardrobes, buckets, pans, cups and mirrors. The dining-hall is well supplied with table-linen, silverware and china. The kitchen is equipped with modern appliances for culinary purposes.

The bathrooms and closets are located in brick buildings apart from the barracks, and connected with it by covered gangways.

THE ELECTRICAL INSTRUMENT LABORATORY is a brick building of special design, containing no magnetic material in its permanent construction. Besides a laboratory for delicate instruments, it also contains a lecture-room and a dark room for photometry and X-ray work.

THE HORTICULTURAL BUILDING, a two-story frame structure, contains the offices, class-rooms and collections of the horticultural division, and the local office of the United States Weather Bureau. There are also a spacious, well-equipped greenhouse, a canning-house, and a packing-house with brick basement.

THE DAIRY BUILDING is a wooden structure of modern design, constructed especially to illustrate the most approved methods of dairy practice.

THE VETERINARY OPERATING HOUSE is a commodious frame building, containing stalls for animals under treatment, a pharmacy and dissecting-room. A veterinary hospital is to be built in the near future.

THE HOSPITAL, located more than a quarter of a mile from the barracks, is a wooden building especially designed for the purpose. It is lighted by electricity and has a thorough sewerage system. The hospital is in the immediate charge of the College Surgeon, who is assisted by an experienced matron and a nurse, thus ensuring the best personal attention to each patient.

THE CALHOUN MANSION, the former residence of John C. Calhoun, is kept in honor of his memory, in accordance with the provisions of Mr. Clemson's will.

RESIDENCES.—Nine two-story brick buildings, nine six-room cottages, and sixteen smaller houses furnish residences for professors and other officers of the College.

Those members of the faculty who do not occupy residences are furnished lodgings at the College Hotel, a beautifully located building overlooking the campus.

THE LAUNDRY is a brick building specially constructed and fitted with the improved machinery of a modern steam laundry. It is operated exclusively for students.

EXPERIMENT STATION OFFICES.—A wooden building containing offices, a library, and storage and seed rooms, is provided for the use of officers of the Experiment Station.

FARM BUILDINGS.—The College is provided with commodious barns and other farm buildings of modern design, which are described more fully in connection with the equipment for instruction in agriculture.

THE POULTRY YARDS are supplied with incubators, brooders, and other modern appliances. There are thirty-six pens 20x32 feet, each containing a house 6x8 feet. For every four pens there is a run 80x150 feet, all enclosed with poultry cabled wire.

Water Supply.

There are two sources from which water is obtained. The general supply is collected from springs through iron pipes into a reservoir, from which it is pumped into a stand-pipe eighty feet high, whence it is distributed.

Drinking-water is pumped from a bold spring, in a continuous stream, directly into the barracks. It is by this means furnished fresh, pure, and cold.

The waste water is used for flushing the sewer-pipes, which empty into the Seneca river a half-mile away.

Tuition.

The following extract is taken from Section 1120, Revised Statutes of South Carolina, 1893, Volume I, setting forth the powers and duties of the Board of Trustees: "They shall charge each student a tuition fee of forty dollars per annum; * * * indigent students shall not be required to pay said tuition fee."

In accordance with this law, residents of South Carolina are granted free tuition upon presentation of the following certificate properly signed:

CERTIFICATE OF INABILITY TO PAY TUITION.

This is to Certify, *That I am unable to pay tuition for*
my _____ in the Clemson Agricultural
College for the session of 1899-1900.

Father or Guardian.

I hereby certify that, to the best of my knowledge and belief
the above statement is true.

County Auditor.



TYPES OF PROFESSORS' RESIDENCES.



All other students pay the tuition fee of \$40.00 per session. Blank certificates will be furnished upon application to the President.

Expenses for the Session of 1899-1900.

For Free-tuition Students, \$ 99 80

For Tuition-paying Students, 139 80

These charges are due and payable in advance on the first day of each quarter, as follows:

September 13, 1899, or on day of entrance:

Incidental Fee, \$ 5 00

Medical Fee, 5 00

Uniform, 22 30

Board and washing, first quarter, . . . 16 88

Total for Free-tuition Students, \$49 18

Tuition, first quarter, \$10 00

Total for Tuition-paying Students, 59 18

November 21, 1899:

Board and washing, second quarter, . . \$16 88

Total for Free-tuition students, 16 88

Tuition, second quarter, \$10 00

Total for Tuition-paying Students, 26 88

January 28, 1900:

For Free-tuition Students, third quarter, . . . 16 88

For Tuition-paying Students, 26 88

April 6, 1900:

For Free-tuition Students, fourth quarter, . . . 16 88

For Tuition-paying Students, 26 88

In addition to the above charges a deposit of \$2.00 is required of all students upon entrance, according to the following resolution of the Board of Trustees:

Resolved, That at the beginning of a session each student be required to deposit \$2.00 with the Treasurer, to be known as a breakage fee. Whenever the property of the College is damaged, the actual cost of the repair of the property damaged shall be charged to the student who damaged the property. If, however, the responsibility can not be fastened upon any student, the amount of the damage shall be prorated equally among all the students. At the end of the session any amount to the credit of a student shall be returned to him.

The price of uniforms is subject to fluctuations of the market.

To the above must be added the cost of books and stationery, which may be obtained at the Cadet Exchange at wholesale prices; also \$1.50 for diploma, payable on graduation.

Remittances should be made in cash, money-order, or New York Exchange, *not by local checks*, to P. H. E. SLOAN, Treasurer, Clemson College, S. C.

A deduction will be made for board and washing only when a student is absent one month or more.

Uniform.

The College uniform is of cadet gray of the West Point pattern, except that the College button is used. For military full dress, the cadet officers wear a plume and sash, and the non-commissioned officers and privates a pompon. This uniform is made of the best Charlottesville mills goods, is neat, and, considering the make and material, is very inexpensive.

Requirements for Admission.

Each candidate for admission must be at least fifteen years of age, except where two brothers apply, one being over fifteen and the other not under fourteen.

Certificates of good moral character are required of all candidates for admission not known to members of the faculty; and, if the candidate comes from another college, this certificate must show that he was honorably discharged.

For admission into the Freshman class thorough proficiency is required in arithmetic, elementary algebra, English grammar, geography, and history of the United States. The textbooks recommended to those preparing to enter the Freshman class are Wells' Academic Arithmetic, Wentworth's Algebra, Whitney-Lockwood's English Grammar, Redway and Hinman's Natural Advanced Geography, Eggleston's History of the United States and Its People.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption or other contagious or communicable diseases, or permanent disability for manual labor or military duty.

Reports.

Monthly reports are furnished to parents and guardians, giving the standing of students in all studies and in discipline. Reports are also issued at the end of each term, showing the grades, based upon class-work and examinations, in all studies. Parents will be advised to withdraw students who habitually shirk duties.

Regulations.

In addition to the special regulations of the military department, cadets are subject to the following general regulations:

Matriculation is equivalent to a pledge to conform to the rules and regulations of the College.

Cadets are subject to military discipline at all times, and are required to take part in drill, guard duty, and other military exercises.

All students are required to pursue regular courses, except when granted special permission by the faculty to take irregular courses.

Students in any class who fail to pass on more than one subject will not be promoted, and no student will be promoted to the Senior class until all deficiencies are made up.

Students are required to make up all class-work from which they have been absent for any cause except military duty.

All regular students are required to board in the barracks, except those who live with their parents near enough to attend from their homes.

Each student is required to purchase the prescribed uniform. Students may provide themselves with such work-clothes as they desire.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow and two pillow-cases. Beds are single width.

Not more than three students are permitted to occupy the same room. Those occupying a room are consulted before another student is assigned to that room. A student not satisfied with his roommates has the privilege of applying for permission to move to another room, and such applications are granted when practicable.

All students are required to purchase the text-books used in their classes, unless excused for special reasons by the instructors. Text-books are kept at the Cadet Exchange and are furnished to students at wholesale prices.

Cadets will at all times be respectful in their bearing to professors and other officers of the College.

The practice known as hazing is positively forbidden, and any cadet indulging in this practice will be expelled from the College.

Cadets are positively forbidden to use or to have in their possession intoxicating liquors of any description.

The use of tobacco in any form by cadets is prohibited.

Profanity is positively forbidden.

Cards and all games of chance are positively forbidden.

All combinations of cadets for the purpose of censuring or praising one of their number are prohibited; also, all combinations to defeat the purpose of any regulation of the College.

Fighting is positively forbidden. If any cadet shall consider himself wronged by another or by a professor or by an officer, he is to complain thereof in writing to the President, who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

No cadet will take food from the mess-hall without permission from the President.

Any cadet receiving 100 demerits during a term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

College Organization.

The College is organized into six departments, as follows:

1. Agricultural Department.
2. Mechanical Department.
3. Department of Chemistry and Natural Science.
4. Academic Department.
5. Textile Department.
6. Military Department.

Each department is presided over by a professor designated by the Board of Trustees as Head of Department, who, in addition to teaching, exercises general supervision over the work of the department. The divisions of each department are in the immediate charge of special instructors.

THE AGRICULTURAL DEPARTMENT comprises the following divisions: General Agriculture, including Animal Husbandry; Horticulture; Entomology; Botany; Dairying; Veterinary Science; Poultry Raising.

THE MECHANICAL DEPARTMENT comprises the divisions of Applied Mechanics, including Experimental Engineering; Physics; Electrical Engineering; Drawing and Designing; Forge and Foundry; Machine-Shop; Woodwork.

THE DEPARTMENT OF CHEMISTRY AND NATURAL SCIENCE includes Chemistry, general, industrial, agricultural and analytical; Geology and Mineralogy.

THE ACADEMIC DEPARTMENT comprises the courses in Pure Mathematics, Applied Mathematics, English, History, and the Subfreshman Division.

THE TEXTILE DEPARTMENT comprises the courses in Textile Industry.

THE MILITARY DEPARTMENT comprises theoretical and practical instruction in Military Science and Tactics.



THE JOHN C. CALHOUN MANSION.



Experiment Station.

The State Experiment Station occupies a portion of the College farm, and affords valuable opportunities for instruction in the various divisions of the Agricultural department.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investigation being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom. The organization and work of the Experiment Station are described at the end of this catalogue.

Farmers Institutes.

During the past year farmers' institutes were held, under the management of the College, in many counties of the State. The President and Professors of Agriculture, Chemistry, Horticulture, Dairying, Veterinary Science, Botany, and other members of the faculty have taken part in these institutes. The purpose has been to bring practical information to the farmer, and to give him the results of scientific investigation in the interest of Agriculture. The success thus far attained is most encouraging, and leads to the hope that these institutes may become a permanent feature in the work of the College.

They will be continued during the coming vacation. A special institute of ten days' duration will also be held at the College during the month of August, in which, besides the College faculty, a number of prominent speakers from other states are expected to participate.

Farmers wishing an institute held in their county or community should write to the President.

Nature Study.

Arrangements are being made to issue in the near future a series of leaflets on Nature Study. These will be prepared specially for the use of teachers, and will be distributed free of charge for the purpose of encouraging and aiding in the introduction of Nature Study into the public schools of the State.

Student Labor.

Considerable manual labor is necessary to carry on the Agricultural and Mechanical departments of the College. Students who desire it are employed in this work, when practicable, and are paid for it at the rate of eight cents an hour; but no student is allowed to undertake work that interferes with his College

course. Some needy students are thus enabled to pay part of their College expenses. The demand for such labor always exceeds the supply, and the College assumes no obligation to furnish employment for wages. Students entering late are at a special disadvantage in securing this work.

Religious Influences.

Every effort is made to surround the students with safe religious influences. There is preaching in Memorial Hall every Sunday morning by ministers of the different denominations, and chapel services are conducted every morning by the President and other members of the faculty. All students are required to attend these exercises unless specially excused.

A Sunday School, at which attendance is voluntary, also meets every Sunday morning, and students are encouraged and urged to attend.

Young Men's Christian Association.

This is a voluntary organization of the students, and is entirely under their management. The objects of the Association are to promote Christian fellowship among its members and aggressive Christian work among the students. The meetings are held in Memorial Hall every Sunday evening. The membership is of two classes—active and associate. A member in good standing of any evangelical church may become an active member of the Association, and any young man of good moral character may become an associate member. The faculty are in hearty sympathy with the work of the Association, and render cheerful service when requested to do so. Parents and guardians are advised to encourage the students to join the Association as soon as they reach the College.

Care of the Sick.

The College Surgeon will keep parents fully informed of the condition of sick students. In case of serious illness parents will be notified by telegraph.

Students have permission to call on the Surgeon at any time for advice and treatment. The Surgeon can not undertake to notify parents every time a student reports to the hospital for medicine or rest on account of some slight complaint; but parents may rest assured that they will hear from the Surgeon promptly in case of sickness of any consequence.

The health record for the past year has been exceptionally good, and many sanitary improvements have been made to insure the continued health of the students.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.



HOSPITAL.



Library.

In the Agricultural building are a series of rooms specially constructed for the use of the Library. About 3,500 volumes of standard English literature, history, biography, general science, etc., and about 1,000 volumes of government publications are now on the shelves. The number of books is being added to each year. They have been recently classified and arranged, and excellent opportunity is now offered students for general and supplementary reading.

In recent purchases for the library special efforts have been made to procure all available books on South Carolina history and literature.

Reading-Room.

Connected with the Library [is the students' reading-room, supplied with the leading magazines and daily papers, and most of the county papers of the State.

Literary Societies.

Three literary societies, the Calhoun, the Palmetto and the Columbian, furnish a valuable supplement to the work of the College. These societies afford facilities for practice in debate, oratory, declamation and essay-writing, and their members acquire valuable knowledge of parliamentary law and usage. The meetings are held weekly on Friday evenings. Public celebrations and contests are also held at intervals during the year, at which there are debates, orations and declamations by the students.

The societies occupy halls in the main College building, which are furnished with carpets and opera-chairs, and are maintained entirely by the students. A small fee is charged for initiation, and there are also monthly dues of a few cents to meet running expenses. The total membership usually comprises about nine-tenths of the registered attendance at the College. All students are advised to join one of these societies.

THE CLEMSON COLLEGE CHRONICLE, a magazine designed to encourage literary work among the students, is published monthly during the session by the literary societies.

Scientific Association.

A Scientific Association has been organized for the purpose of promoting knowledge of the progress of the natural sciences, theoretical and applied. Public meetings are held every two months, at which subjects of general scientific interest are discussed by members of the faculty and advanced students of the College. These meetings are largely attended by the students.

Cadet Exchange.

A Cadet Exchange is maintained, where students may purchase at wholesale prices necessary articles, such as books, stationery, collars, cuffs, underwear, etc.

Athletics.

It is the policy of the College to sanction and encourage manly athletics so long as studies and other duties are not interfered with. Class records show that, as a rule, students engaged in athletics do as well in their classes as those who are not. Should future experience reverse these records athletic sports will be restricted or prohibited altogether.

The most popular games this year are baseball and football. It is assumed that parents are willing for their sons to participate in these games unless the President is definitely notified to the contrary. The athletic teams will be permitted to take a few trips each season, usually on Saturdays, to play intercollegiate games. Students must file written permission from parents for these trips.

Medals.

PRESIDENT'S ESSAY MEDAL.—A gold medal is offered annually by the President for the best essay. The subject is announced early in the year and the competition is open to all students. In 1898 this medal was awarded to Mr. W. L. Moise; subject, "The Proper Attitude of the College Student toward the Enforcement of Discipline."

R. W. SIMPSON MEDAL.—A gold medal is awarded annually by Messrs. Oehm & Co. to the best drilled cadet in the Freshman, Sophomore, and Junior classes. This medal was awarded in 1898 to Mr. J. C. Cheatham.

A **GOLD MEDAL** is also awarded annually to the captain of the best drilled company. Awarded in 1898 to Capt. G. H. Swygert of Company A.

A **FLAG** is also awarded to the best drilled company. This was won in 1898 by Company A.

SOCIETY MEDALS.—The literary societies award medals for excellence in debate, oratory and declamation.

The Clemson Pictures.

Following is a list of the oil-paintings bequeathed by Thomas G. Clemson. This collection, with additional portraits, may be seen in the President's office in the Agricultural building:

1. Virgin and Child.....Rubens.
2. Head of Velasquez.....
3. Landscape.....Poussin.
4. Flower Piece.....Zegers.

5. The Jesuit with Medallion.....Teniers.
6. Fruit, etc.....Deheem.
7. Student's Repast.....Vansomer.
8. Peasant Eating Soup.....Frans Hals.
9. Adoration (on copper).....Frans Hals.
10. Boy Mending Pen.....Spanish.
11. Head Study.....Greuze.
12. Flowers.....Robert.
13. Cattle.....Louis Robert.
14. Goats and Sheep.....Louis Robert.
15. Landscape.....Louis Robert.
16. Magdalen....Van Schendel.
17. Landscape.....Fearnley.
18. Gateway.....Tavernier.
19. Titian Placing his Model.....
20. The Quarrel.....Venneman.
21. Reconciliation.....Venneman.
22. Two Old Men.....Venneman.
23. Scene in Spain.....Bossnet.
24. Marine View in Holland.....Francia.
25. Poverty and Suffering..DeBlock.
26. Group of Lambs.....Louis Robert.
27. Tasso in Prison Visted by Montaigne.....Copy after Gallait.
28. Magdalen, Study after Murillo.....DeBlock.
29. Girl of Antwerp with two Dogs.....Copy after Landseer.
(Original in the gallery of King Leopold of Belgium.)
30. Landscape.....Copy of Koekkoek by Louis Robert.
31. Waterfall.....Copy of Auerbach by L. Robert.
32. Peasant Girl.....By an Antwerp Artist.
33. Gate of the Alhambra.....Copy of Bossnet.
34. Beatrice Cenci.....Very old copy; done before original had faded.
35. Mother Teaching Son.....Copy.
36. Landscape.....
37. Old Man Smoking.....Leys (Copy)

COURSES OF STUDY.

There are three full courses of study—Agricultural, Mechanical and Textile. All regular students in the Freshman class pursue the same studies. The Mechanical and Textile courses are also the same in the Sophomore year. Students pursuing the Mechanical course choose between electrical engineering and civil engineering in the Junior and Senior years.

Upon the completion of one of these courses the student is awarded a diploma conferring the degree of Bachelor of Science (B.S.).

Graduates of the Mechanical course, or of equivalent courses in other institutions, may complete the Textile course in one year.

AGRICULTURAL COURSE.

Freshman Class.

THEORETICAL.	Hours per week.		PRACTICAL.	Hours per week.	
	1st Term	2d Term		1st Term	2d Term
Mathematics.....	5	5	Woodwork	3	3
English.	5	5	Mechanical Drawing..	3	3
History	5	1	Free-hand Drawing..	4	4
Agriculture	0	4	Forgework.....	3	3
			Drill	2	2

Sophomore Class.

Mathematics.....	5	5	Chemical Laboratory.	4	4
English	3	3	Surveying Field Work	2	2
Chemistry.....	3	3	Stock Breeding.....	2	0
Stock Breeding.....	2	0	Agriculture.....	0	2
Horticulture.....	2	0	Horticulture.....	2	2
Botany	0	2	Dairying	2	0
Dairying	0	1	Entomology }	1	3
Entomology	0	1	Botany }		
			Drill	2	2

Junior Class.

English.....	2	2	Chemical Laboratory.	6	6
History	4	0	Agriculture	2	2
Chemistry.....	2	2	Horticulture.....	2	2
Military Science.....	1	1	Dairying	2	0
Dairying	2	0	Entomology }	1	3
Botany	0	2	Botany }		
Horticulture.....	0	2	Drill	2	2
Entomology	0	2			
Veterinary Science...	2	4			
Agriculture	2	0			

Senior Class.

English	2	2	Chemical Laboratory.	6	6
History.....	2	2	Veterinary Science...	3	3
Chemistry.....	2	2	Mineralogy	2	0
Geology	3	3	Agriculture	0	2
Agriculture	2	2	Botany	2	0
Veterinary Science ...	1	1	Horticulture.....	0	2
Botany	2	0	Drill	2	2
Entomology	0	2			
Military Science.....	1	1			

MECHANICAL COURSE.(Including Electrical ~~and~~ Civil Engineering.)**Freshman Class.**

THEORETICAL.	Hours per week.		PRACTICAL.	Hours per week.	
	1st Term	2d Term		1st Term	2d Term
Mathematics	5	5	Woodwork	3	3
English	5	5	Mechanical Drawing..	3	3
History	3	3	Free-hand Drawing..	4	4
Agriculture	2	2	Forgework	3	3
			Drill	2	2

Sophomore Class.

Mathematics	5	5	Woodwork	3	3
English	3	3	Mechanical Drawing..	3	2
Chemistry	3	3*	Foundry	3	3
Natural Philosophy...	2	2	Chemical Laboratory.	4	2
History	2	2	Drill	2	2
			Descriptive Geomet'y	0	3

Junior Class.

Mathematics	5	5	Machine Shop	4	4
Physics	2	2	Mechanical Drawing	3	3
Electrical Engin'r'g	3	3	Electrical Lab.	3	3
Or Civil Engineering			Or Civil Engineer'g		
Mechanics (<i>Chem.</i>)	2	2	Field Work.	3	3
English	2	2	Drill	2	2
Military Science	1	1			
Mechanism	0	2	PHYS. LAB.	3	3
Steam Engine	4	4			

Senior Class.

<i>Steam and</i>			<i>Machine or bridge</i>		
Mechanical Engin'r'g.	2	2	Shopwork	4	4
Electrical Engin'r'g }	5	5	Mechanical Drawing..	2	2
Or Civil Engineering }			Electrical Lab.	3	3
Applied Mechanics...	3	3	Or Civil Engin'g		
History	2	2	Field Work		
English	2	2	Mechanical Laborat'y	3	3
Military Science	1	1	Drill	2	2

*Second Term—Chemistry first half, ~~Mathematics~~ second half.*R Survey 2.*

TEXTILE COURSE.**Freshman Class.**

THEORETICAL.	Hours per week.		PRACTICAL.	Hours per week	
	1st Term	2d Term		1st Term	2d Term
Mathematics	5	5	Woodwork.....	3	3
English.....	5	5	Mechanical Drawing.	3	3
History.....	5	1	Free-hand Drawing..	4	4
Agriculture.....	0	4	Forgework.....	3	3
			Drill.....	2	2

Sophomore Class.

Mathematics.....	5	5	Woodwork.....	3	3
English.....	3	3	Mechanical Drawing.	3	2
Chemistry.....	3	3*	Foundry.....	3	3
Natural Philosophy...	2	2	Chemical Laboratory	4	2
History.....	2	2	Drill.....	2	2
			Descriptive Geometry	0	3

Junior Class.

Mathematics.....	5	5	Machine Shop.....	5	4
Physics.....	2	2	Mechanical Drawing	4	3
Textile Industry.....	5	5	Textile Industry.....	6	6
English.	2	2	Drill.....	2	2
Military Science.....	1	1			

Senior Class.

Textile Industry	8	8	Shopwork.....	5	5
History.....	2	2	Mechanical Drawing.	2	2
English.....	2	2	Textile Industry.....	8	8
Military Science	1	1	Drill.....	2	2

*Second Term—Chemistry first half, Mathematics second half.

Subfreshman Course.

A Subfreshman course is provided for students not prepared to enter the Freshman class. In addition to instruction in the usual preparatory branches, the elements of agriculture, mechanic arts and military drill are also included in this course. The work is thus more closely articulated with the instruction in the advanced classes than that given in other preparatory institutions.

Special Courses.

Graduates of this and other institutions, or other mature young men of earnest purposes, who desire to pursue special lines of work will be given every opportunity that the College affords, upon satisfying the faculty that they are qualified to undertake such courses to advantage. Students thus admitted are expected to apply themselves assiduously, and with the approval of the faculty, may board outside of the barracks.

Irregular Courses.

Students are earnestly advised to pursue regular courses; but those who for satisfactory reasons are unable to do so, may, upon the approval of the faculty, pursue irregular courses. No student whose time is not fully occupied will be permitted to remain at the College. No student who is behind in more than one subject will be permitted to change from a regular to an irregular course. An application for an irregular course must be accompanied by the written approval of parent or guardian, and of instructors in all subjects for which application is made. Diplomas are not issued to irregular students.

INSTRUCTION AND EQUIPMENT.

GENERAL AGRICULTURE.

PROFESSOR NEWMAN.

ASSISTANT PROFESSOR CONNER.

This study is pursued in all of the classes, commencing with the elementary principles in the Freshman year. During this year the instruction is confined to the application of principles and practice which do not require a knowledge of the sciences related to agriculture.

As the student progresses in the study of the natural sciences, the application of these sciences is taught in their relation to the art of agriculture, special stress being placed upon the protection, improvement, fertilization, and all manipulations of the soil in the preparation for planting and in the cultivation of crops.

The cultivation of each important crop is discussed in the concrete. Special attention is bestowed upon the grasses and their cultivation. In the higher classes the employment and management of labor, farm equipment, and farm management are discussed. All instruction is given by lectures, the subjects being illustrated as far as possible by practical exercises.

Reference-books: Vorhees' First Principles of Agriculture, Storer's Agriculture, Experiment Station Bulletins.

Equipment.

The College has a large storage barn provided with silos, a cow barn furnished with various forms of stanchions, a mule barn provided with the most improved forms of stalls and feed-racks, implement and wagon sheds for storage of tools, etc., compost building for making compost in large quantities, and two large cribs for storage of corn.

Among agricultural machinery and implements may be mentioned the following: self-binder, corn-harvester, Deering ball-bearing mower, Osborne mower, self-dumping rake, check-row corn-planter, Buckeye cultivator, B. F. Avery cultivator, Tower cultivator, disc-cultivator, spring-toothed harrow, smoothing harrows, various forms of pulverizers, manure-spreading machines, fertilizer and grain drill, various forms of small fertilizer drills, Planet Jr. drill, two Planet Jr. plows, scientific mill, stone grist-mill, Tornado ensilage cutter, small thresher, hand-gin, rock-crusher, road-machine, three terrace-levels, and a 10 kw. electric motor.

HORTICULTURE.

ASSISTANT PROFESSOR DU PRE.

MR. WALKER.

The course in horticulture consists of horticulture proper home gardening, truck farming, pomology, viticulture, canning, and experiment work.

Instruction is given by lectures, covering the subject of horticulture in its comprehensive sense. The instruction is continued through the entire course and is illustrated by practical exercises in the garden, the orchard, the vineyard and the greenhouse.

In the practical work, the student is required to labor, and is thereby taught by actual experience the use of tools, the proper mode of preparing, fertilizing and cultivating the soil; shipping, storing, and canning vegetables and fruits; training and pruning vines and trees; propagating plants by seeds, grafts, buds, layers, leaves, and divisions. Instruction is also given in the making and use of hot-beds, cold-frames, mulching, etc., together with the art of forcing, crossing, and hybridizing, and the care of plants in the greenhouse.

Equipment.

The Horticultural building, a two-story frame house, contains the class-room, offices and collections of the horticultural division, and the local office of the United States Weather Bureau.

The equipment for practical instruction in horticulture consists of the following: canning outfit complete; greenhouse, 21x140 feet, heated by hot water; experimental garden, about five acres; orchard, vineyard, and plats of small fruits, about fifty acres; truck farm, about twenty-five acres; and a small nursery.

ENTOMOLOGY.

MR. WALKER.

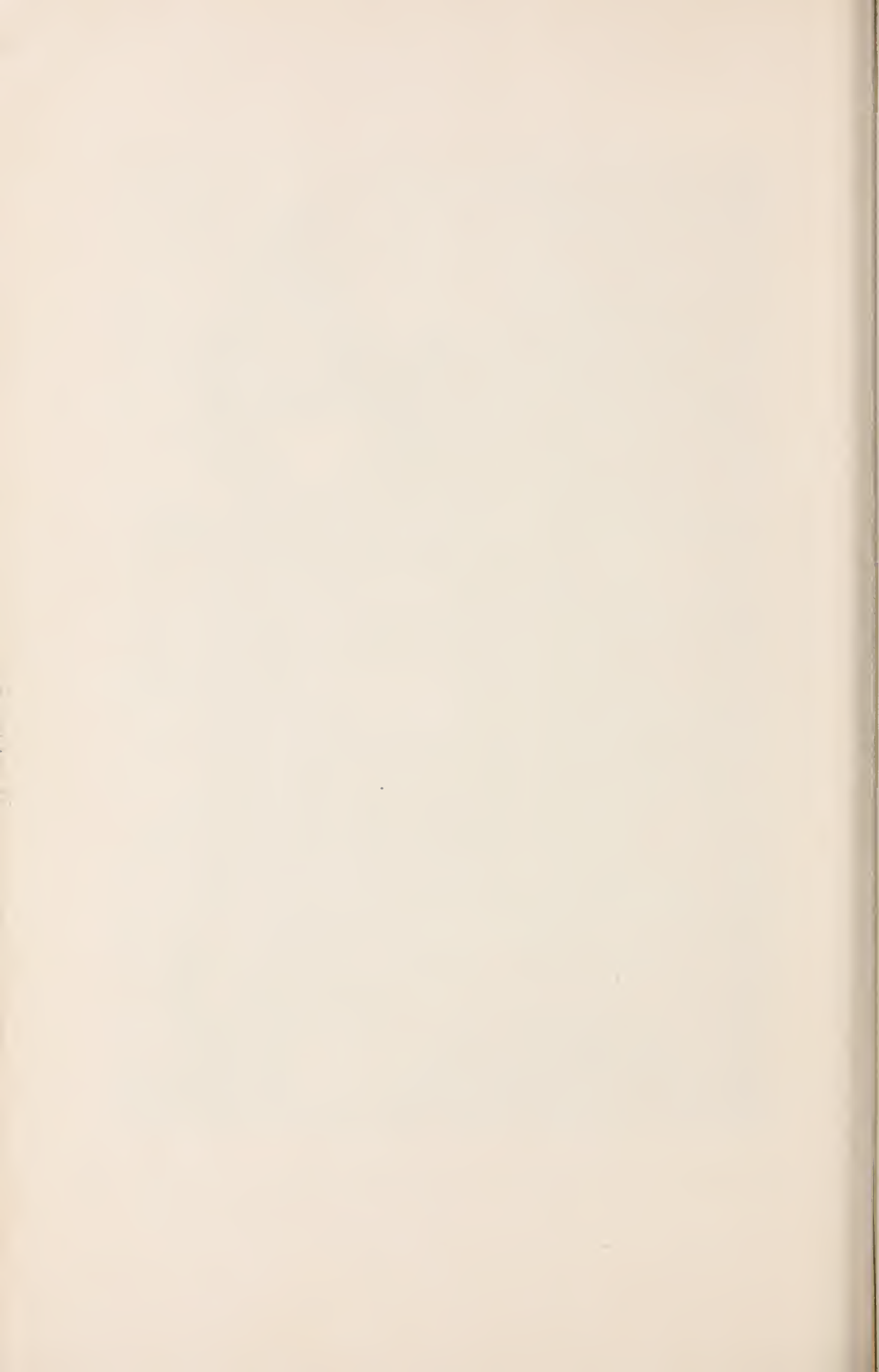
The aim of instruction in this division is primarily to give the student a working knowledge of the science for practical purposes; secondarily, to lay the foundation for further study, should the student desire to continue the subject. Special attention is given throughout to species or groups of insects of economic importance, both noxious and beneficial, together with methods of combating the former intelligently.

Sophomore Class.

GENERAL COURSE.—Structural, morphological and systematic entomology. Lectures upon the characteristics of the orders, suborders and more important families, with field and laboratory work. Comstock's Manual for the Study of Insects is used as a guide.



HORTICULTURAL BUILDING.



Junior Class.

ECONOMIC ENTOMOLOGY.—A course in applied entomology, dealing with the more important insect pests of crops and the methods and means of combating them, including the theory and practice of spraying.

Senior Class.

ECONOMIC ENTOMOLOGY.—Animal Parasites. Lectures upon the parasitic pests of the various farm animals.

Equipment.

A large, well-lighted room in the Agricultural building has been assigned to the division and is being properly equipped. Specimens illustrating the orders, suborders, and many of the important families are on hand, and the collection is constantly growing. Twelve simple and three compound microscopes are available for laboratory work, and others are to be added this year. Forests, fields, streams, orchards and greenhouses are convenient.

SPECIMENS WANTED.—A collection to represent the insect fauna of the State has been begun. Specimens of insects, larvæ, cocoons, etc., as well as notes upon any insects in the State, will always be thankfully received.

To send living specimens it is only necessary to inclose them in a tight box with a supply of food or food-plant and mail them to the Division of Entomology. A metal box is preferable. Dead specimens of larvæ or insects may be sent in cotton previously moistened with alcohol or formalin and inclosed in a tight metal box.

BOTANY.

DR. ANDERSON.

Sophomore Class.

SECOND TERM.—General Course. During the second term the agricultural students are given a general course in botany. The student becomes acquainted with the use of the simple microscope in examining the organs of common flowering plants. Much time is devoted to the identification of common wild and cultivated plants. Special attention is given to the study of the grasses and clovers. The text-book used is Wood's Botanist and Florist.

Junior Class.

FIRST TERM.—Plant Histology and Anatomy. Work with the compound microscope is begun in the Junior class in the study of plant histology and anatomy. The student becomes

acquainted with the use of the compound microscope in studying the minute structure of plants, seeds, and plant-tissues. A microscopic examination is made of a few plant-products, as starch, protein, etc.

SECOND TERM.—Physiology of Plants. During the second term a short course in the physiology of plants is given by means of lectures and experiments in the field and laboratory. Practical experiments illustrating the principles of plant life and growth are carried on by the students and instructor.

Senior Class.

FIRST TERM.—Bacteriology. A short course in bacteriology is given by lectures and laboratory work. The students and instructor prepare the different culture media used in isolating a few of the common bacteria of the soil, air and water. Only the non-pathogenic and beneficial forms are studied.

SECOND TERM.—Cryptogamic Botany. During the second term a short course in cryptogamic botany is given. Special attention is given to those fungi that produce diseases of the common economic plants.

Equipment.

One of the rooms in the Agricultural building has been fitted up specially for botanical instruction, with cases, laboratory tables, and gas and water connections.

The laboratory is equipped with twenty-five simple microscopes and sixteen compound microscopes, as well as with the necessary chemicals, reagents and glassware. It is also supplied with a few of the most important pieces of bacteriological apparatus—hot-air oven, steam sterilizer, hot-water funnel, petri dishes, test tubes, flasks, etc.

A collection of the flora of the State has been begun. These plants, as well as the plants received through donations and exchanges, are properly mounted and placed in the College herbarium. The herbarium contains at present over 5,000 specimens of fungi, mosses, ferns, and flowering plants, all of which are accessible to students and others. A collection of seeds has also been begun.

Specimens of plants, seeds, and plant-products of all kinds for instruction, as well as for permanent exhibit, will always be gladly received.

DAIRYING.

ASSISTANT PROFESSOR CONNER.

Sophomore and Junior Classes.

Students who take the agricultural course receive instruction in dairying. In the dairy building, which is equipped with apparatus for testing milk, separating, butter-making, cheese-



CAMPUS VIEW, SHOWING PORTION OF DAIRY HERD.



making, etc., practical instruction is given and opportunity afforded students of learning the various operations carried on in a well-conducted private dairy, creamery or cheese factory. Wing's Milk and Its Products is used as a text-book.

Instruction is also given in the breeding, feeding and handling of dairy cattle, the herd belonging to the College being used for the purpose of illustration.

Equipment.

The commodious dairy building has an independent steam plant and water-works, and is supplied with everything needed for making butter and cheese on a factory and private dairy scale, including the leading makes of cream-separators, churns, butter-workers, and milk-testers. Students are thoroughly drilled in the use of this apparatus.

ANIMAL HUSBANDRY.

ASSISTANT PROFESSOR CONNER.

Sophomore Class.

STOCK BREEDING.—A careful study of the different types of domestic animals is pursued, and the student is thoroughly drilled in the principles and methods of successful breeding, heredity, atavism, variation, selection, fecundity, influence of environment, in breeding, cross-breeding, grading, influence of previous impregnation, controlling of sex, etc. The animals in the farm herd are used for illustration.

Junior Class.

BREEDS OF LIVE STOCK.—The different breeds of horses, cattle, sheep and swine are considered, and those best adapted to the South are discussed at length. The College farm has a number of breeds of domestic animals which serve to illustrate the subject.

As a supplement to this work, the student is drilled in the use of the score-card, which fixes the different types and breeds firmly in his mind.

Senior Class.

STOCK FEEDING.—This course includes the following subjects: Laws of animal nutrition; composition of the animal body; fodders as a source of nutrients; digestion, resorption circulation, respiration, and excretion; formation of muscle, flesh

and fat; composition and digestibility of feeding-stuffs, and their preparation and use; feeding for fat, for milk, for wool, for work and for growth.

Special attention is given to the feeding of mules, and the available feed-stuffs of the South are discussed at length.

POULTRY RAISING.

The work of this division will be directed in such lines as will furnish practical, useful information to the people, and thereby stimulate interest in and attention to this important source of family supply and revenue. Under the auspices of the Experiment Station experiments will be conducted in rearing the various breeds of poultry and the English ring-necked and Mongolian pheasants.

The work and equipment in this division will serve as valuable object-lessons to students of the College, and will be used to illustrate the lessons of the class-room.

Equipment.

The plant of this division consists of 36 pens 20x32 feet, and in each a house 6x8 feet. For every four pens there is a run 80x150 feet, all enclosed with poultry cabled wire. There are also several styles of incubators, brooders and other modern appliances.

VETERINARY SCIENCE.

DR. NESOM.

The object of this course is to acquaint the agricultural student with the elementary principles of veterinary medicine and surgery. The time is too short to make professional veterinarians of those who take this study, but is sufficient to make them more intelligent stockmen when graduated. The entire time devoted to the several veterinary studies is equivalent to four hours lectures and three hours practical work a week for one year, and is given as follows:

Junior Class.

FIRST TERM.—Lectures on anatomy and physiology of the domesticated animals.

SECOND TERM.—Lectures on histology, pathology and materia medica.

Senior Class.

BOTH TERMS.—During the entire Senior year lectures on the principles and practice of veterinary medicine are given once a week. Only the more common diseases of farm animals can



VIEW IN GREENHOUSE.



VETERINARY CLINIC, MAY 8, 1899.



be considered during the limited time devoted to this study, but special attention is given to those diseases that occur in epizootic outbreaks. Among these may be mentioned glanders, anthrax, Texas fever, tuberculosis, cholera, sheep "scab," hydrophobia, and favus. Careful consideration is given to the bacteriological and parasitic agencies causing these diseases.

LABORATORY.—A limited amount of laboratory work is given during the lectures to illustrate the structure of normal and pathologic tissues and the simpler reactions in chemical physiology. In pharmacy each student is required to compound a limited number of prescriptions.

CLINIC AND DISSECTION.—Every Monday afternoon a free clinic is held at the veterinary hospital. This is liberally patronized by the stockmen of the surrounding country, and affords the students ample practical work in surgical operations and the treatment of animal diseases. Advantage is taken of accidental material for post-mortem examination and gross dissection.

POSTGRADUATE AND SPECIAL WORK.—Graduates of this and other colleges and young men found proficient in the elementary branches of science and literature may receive special instruction. This work is designed as a preparatory course to entrance into a regular veterinary college. The special needs of each student are considered, and the work is planned to meet his individual case. The course taken here will shorten the time necessary for graduation from the leading veterinary colleges, whether the student desires to become a veterinary practitioner, government meat-inspector, or army veterinarian.

Equipment.

The veterinary class-room and laboratory is about 30x50 feet, provided with steam heat, electric lights, water, gas, and the necessary furniture. It is amply supplied with chemicals and the best imported apparatus for technical work.

The old veterinary hospital is to be replaced by an entirely new structure of modern design, containing apartments for office, drugs, dissecting and horse-shoeing, besides stalls, feed-bins, water supply and electric lights. One of the best revolving operating tables has been provided. The surgical instruments and appliances now on hand, with a few additions, would do credit to a regular veterinary college. A complete outfit for horse-shoeing is provided. A good stock of drugs and chemicals is kept on hand and prescriptions are filled upon request.

It is hoped that in the near future the facilities may be so extended as to include practical work in caring for animals undergoing treatment in hospital, horse-shoeing, and the inspection of meat-producing animals designed for slaughter

CHEMISTRY.

PROFESSOR HARDIN.

ASSISTANT PROFESSOR BRACKETT.

MR. SHIVER.

Sophomore Class.

BOTH TERMS.—General Chemistry.—Inorganic chemistry and the leading facts and principles of organic chemistry. Text-book, Roscoe's Elementary Chemistry. Laboratory—Introductory work and qualitative analysis. Text-book, Jones' Junior Course in Practical Chemistry.

Junior Class.

BOTH TERMS.—Industrial and Analytical Chemistry.—Air, water, food, clothing, building materials, and other articles used in every-day life. The metallurgy of iron, copper, lead, tin, zinc, silver, and gold. Laboratory—Qualitative and quantitative analysis and assaying. Text-books, Jones' Junior Course in Practical Chemistry, Fresenius' Qualitative and Quantitative Analysis.

Senior Class.

BOTH TERMS.—Agricultural and Analytical Chemistry.—The composition of plants, the sources of plant-food, the composition of soils, the improvement of soils by chemical means, the composition and manufacture of fertilizers, the composition of feeding-stuffs and of dairy products. Text-book, Johnston's Elements of Agricultural Chemistry, edited by Cameron and Aikman. Laboratory—Quantitative analysis of fertilizers, soils, ashes of plants, water, cattle-foods and dairy products. Text-books, Bulletins of U. S. Department of Agriculture, containing methods of analysis adopted by the Association of Official Agricultural Chemists.

Equipment.

THE CHEMICAL LABORATORY is a two-story brick building, 50x80 feet, covered with slate, and finished inside with Southern pine.

On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, and supplied with all the necessary chemical and optical apparatus. Of the other rooms on this floor, one is a balance room for students, one an office, and the third is fitted up as a laboratory for advanced students. The basement is used for assaying and for storage.

On the second floor there are five rooms. The qualitative laboratory, which is the largest of these, is 36x48 feet, with a pitch of seventeen feet in the clear. It will accommodate sixty students at a time, and is provided with hoods for carrying off noxious gases, convenient working



CHEMICAL LABORATORY.



tables, water, gas, and all necessary appliances for experimental work. The other rooms on this floor are the lecture-room, professor's laboratory, an office, and a room for gas analysis.

The Chemical Library is supplied with Wagner's Chemical Technology, Payne's Industrial Chemistry Lunge's Sulphuric Acid, Thorpe's Dictionary of Applied Chemistry, Rickett's Notes on Assaying, Brown's Assaying, Phillips' Metallurgy, Deherain's Treatise on Agricultural Chemistry, Storer's Agriculture in some of its Relations with Chemistry, Wiley's Agricultural Analysis, and with other valuable works on theoretical and applied chemistry, as well as with American and foreign journals.

GEOLOGY AND MINERALOGY.

PROFESSOR LEWIS.

Senior Class.

FIRST TERM.—General Geology.—Dynamical, structural and historical geology, with special reference to the development of the North American continent. The influences of geologic phenomena on man are carefully pointed out, particularly in the consideration of soils, the agents of erosion, transportation and deposit, and resultant topographic forms.

FIRST TERM.—Mineralogy.—Elements of crystallography; laboratory study of crystal forms by the use of models and natural crystals; construction of simple crystal drawings; chemical and physical properties of minerals; chemical and physical tests of known minerals; determination of unknown specimens. Special attention is given to the useful minerals and those forming the chief constituents of rocks.

SECOND TERM.—Economic Geology.—The general characters and modes of formation of ore-deposits, with special reference to ores of the more useful metals; iron, copper, lead, silver, gold, etc. Also a brief discussion of the origin and distribution of the principal nonmetallic minerals; coal, petroleum, natural gas, mineral fertilizers, building stones, salts, clays, etc. The course deals especially with economic deposits of the United States, with particular reference to those of South Carolina so far as at present known.

Equipment.

The teaching collections contain over 1,000 labeled specimens of typical rocks, minerals and fossils, besides abundant material for laboratory study. The collections are arranged in systematic order in glass cases, and are always available to students. The class-room is also furnished with large physical wall-maps of all the continents and an 18-inch terrestrial globe.

For practical work in mineralogy the laboratory is supplied with water and gas and the necessary apparatus and reagents for the determination of minerals by means of their physical and chemical properties.

Standard works on geology and mineralogy are kept in the laboratory for reference. The College is a stated repository for all publications of the United States Geological Survey, and many valuable maps and reports have been received from this source, including all geologic folios that have been issued and a select series of topographic maps for instruction in physiography. A number of valuable maps are also supplied by the United States Coast and Geodetic Survey.

State Specimens Wanted.—Specimens of all rocks, ores and minerals of the State will be gladly received and utilized, both for the instruction of students in the State's resources and as a permanent exhibit for all who may be interested in their development. The professor in charge will correspond with any one who is willing to furnish such specimens, and give information, when desired, as to their nature and value.

APPLIED MECHANICS AND MECHANICAL ENGINEERING.

PROFESSOR BOEHM.

In these courses the student is taught the applications of his scientific, mathematical and technical knowledge to the design and construction of engineering structures, and of machinery and manufacturing plants in general. In previous shop practice the student has acquired some knowledge of the character of engineering materials and a certain necessary familiarity with shop methods. He is, therefore, prepared to study the strength of these materials, their behavior under the various stresses to which they may be subjected, and the methods of proportioning the material in a given machine or structure so as best to withstand these stresses. The principles of mechanism are also taught and a brief course of lectures is given on engineering specifications and the law of contracts. Instruction is given mainly by lectures, supplemented by laboratory practice and by the solution of a wide range of practical problems.

Senior Class.

BOTH TERMS.—Applied Mechanics.—Theory of the resistance and elasticity of engineering materials; tension, compression, shearing and combined stresses; flexure of beams and columns; torsion of shafts; statics of framed structures and of flexible cords; graphical statics; theory of the arch; hydraulics. Text-book, Church's Mechanics of Engineering.

SECOND TERM.—Mechanical Engineering.—Lectures on the design and construction of steam boilers, heaters, pumps and injectors; theory and design of simple, compound and triple expansion steam engines, ice and refrigerating machinery, heating and ventilating systems, transmission of power; engineering specifications and the law of contracts.



MECHANICAL BUILDING.



BOTH TERMS.—Mechanical Engineering—Laboratory Practice. Study, use and calibration of water-meters, weirs, steam gauges, indicators, dynamometers, calorimeters; efficiency tests of screw-jacks and hoists; tests of fuels and lubricants; tests of building materials, as iron, wood, brick, cement, etc.; erecting, lining up and setting the valves of plain slide-valve and automatic cut-off steam engines; indicator practice; horsepower and efficiency of steam and hot-air engines and air-compressors; efficiency trials of steam boilers; duty trial of College pumping engine.

Equipment.

This laboratory occupies a room 41x45 feet, and contains the following equipment: For steam engineering: 15-horse power horizontal, locomotive type boiler; 6-horse power vertical boiler; Erie 6-horse power plain slide-valve steam engine; 2-in.x3-in.x4 in. duplex steam pump; set of steam-gauge testing apparatus; Carpenter's separating steam calorimeter; two throttling steam calorimeters; five steam engine indicators of various makes; two standard injectors. For hydraulic engineering: two hydraulic rams; Pelton water motor; power duplex pump; three weirs; recording altitude gauge; six pressure and altitude gauges. For compressed air: Clayton air compressor with jacketed cylinders; improved air motor. For fuel and lubricants: Carpenter's fuel calorimeter with scales, balances, and oxygen generating devices; standard viscometer. For testing building materials: 100,000-pound Olsen automatic vertical testing machine driven by 5-horse power Westinghouse electric motor, and fitted for tension, compression, and transverse testing; Fairbank's cement testing machine; 3,000-pound transverse testing machine. The laboratory also contains an Ericsson hot-air engine and an assortment of standard thermometers, weights and measures. The apparatus is so arranged that any of it may be used for separate or combined tests, or for any original investigations. Besides the equipment in this room, the electric light and power plant, the heating plant of the College and barracks, the isolated plants at the dairy, horticultural grounds and pumping station are available for instructional purposes.

PHYSICS.

MR. POATS.

Sophomore Class.

SECOND TERM.—Properties of matter, velocity, acceleration, force, mass, work, etc.

Junior Class.

BOTH TERMS.—Sound, heat and light.

Text-books, Gage's Principles of Physics and Deschanel's Natural Philosophy.

Equipment.

The physical lecture-room and laboratory is located in the main College building, being 33x60 feet, and is well equipped for lecture and experimental work in mechanics of solids, liquids and gases, and in acoustics, optics and heat.

ELECTRICAL ENGINEERING.

MR. RIGGS.

Junior Class.

BOTH TERMS.—Study of the elementary principles of electricity and magnetism; elementary dynamo design. Laboratory Work—Verifying the elementary principles of electrical science; setting up and use of primary and secondary batteries; determination of constants of standard instruments; calibration of instruments; wiring, putting in light fixtures, etc. Text and Reference Books: Ayrton's Practical Electricity; S. P. Thompson's Elementary Electricity and Magnetism; Stewart and Gee's Physics, Vol. I; Gray's Absolute Measurements; Ewing's Magnetism.

Senior Class.

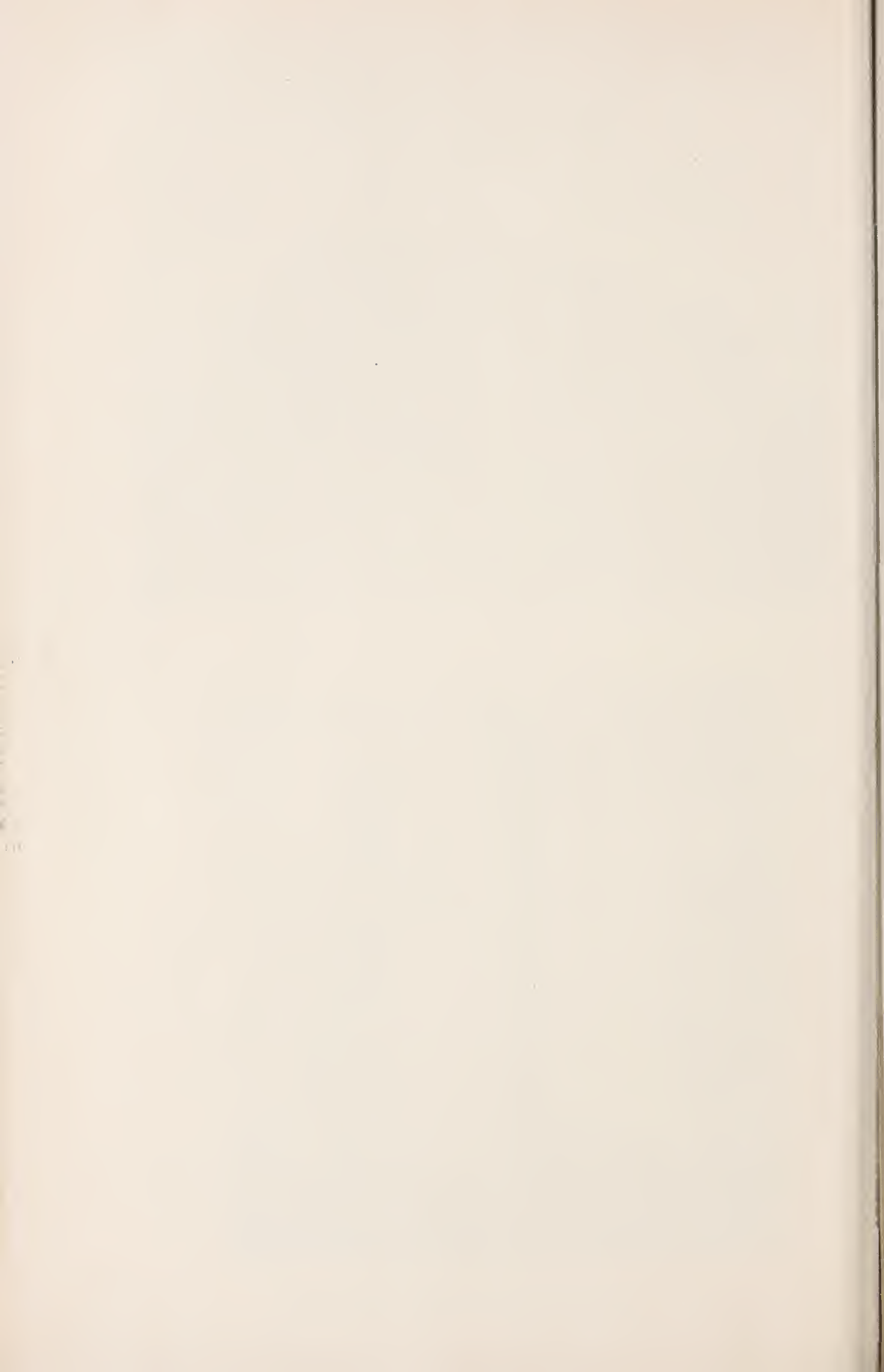
BOTH TERMS.—Study of dynamo electric machinery; design of dynamos, transformers and alternators. Special attention is given during the second term to the study of alternating currents and their applications to light and power. The course is supplemented by lectures and problems on synchronous and induction motors, methods of wiring, specifications for plants, etc. A complete dynamo design, with finished and detail drawings, is required of each student. Laboratory Work—Care, management and testing of dynamos—arc and incandescent; testing and management of direct current motors; calibration of voltmeters and ammeters; management of accumulators; photometry; tests and management of alternators, synchronous and induction motors, transformers, etc.; care and installation of wattmeters; house wiring; construction and winding of dynamos. Text and Reference Books: S. P. Thompson's Dynamo Electric Machinery; Fleming's Alternate Current Transformers, Vols. I and II; Jackson's Alternating Currents; Bell's Electric Transmission of Power; Nichols' Laboratory Manual, Vol. II; Henderson's Practical Electricity and Magnetism.



ELECTRICAL INSTRUMENT LABORATORY.



STAND-PIPE FOR GENERAL WATER SUPPLY.



Equipment.

ELECTRICAL INSTRUMENT LABORATORY.—This laboratory is a separate brick building designed especially for electrical purposes, no iron, steel, or other magnetic substances being used in its permanent construction. Besides the laboratory proper, it contains a lecture-room and a dark room. The lecture-room has a complete line of batteries and electrical instruments, models of dynamos, motors, transformers, arc and incandescent lights, etc., for class illustrations. The dark room, provided for photometry and X-ray work, contains a complete X-ray outfit, designed and built by students; also Crooke's tubes and Edison fluoroscope. The laboratory, in addition to all the necessary elementary apparatus, has the following instruments of precision: Kelvin-Deka ampere balance, Kelvin four-coil astatic galvanometer, four D'Arsonval dead-beat galvanometers, large ring tangent galvanometer, three Elliott Brothers' standard resistance sets, Elliott Brothers' standard tangent galvanometer, Queen's standard ballastic galvanometer, Nalder Brothers' sensitive galvanometer, Rowland-D'Arsonval ballistic galvanometer, Will-young standard condenser, Becker's chemical balance, Carhart-Clark standard cell, thermometers, Wheatstone bridges, etc.

DYNAMO LABORATORY.—In the dynamo laboratory are installed the following machines: 15-horse power Payne engine, Brush 28-arc light generator, Thompson-Houston 4-arc light generator, two $2\frac{1}{2}$ -horse power Kester motors, 5-kw. Edison compound-wound generator, 20-horse power Manchester motor, one single, two and three phase alternating current General Electric Company's generator, rotary alternating or direct current converter; 5-kw., D. C. rotary and three-phase converter; $2\frac{1}{2}$ -horse power three-phase induction motor. The two machines last mentioned were built by students. Two 2-kw. two-phase alternators are now being built by students in the shops. The following measuring instruments are in use: Set of Weston portable ammeters and voltmeters, Ayrton spring voltmeter, Carden voltmeter, Sieman's electro-dynamometer, Kelvin electro-static voltmeter, Weston standard laboratory voltmeter, Thompson recording wattmeter, etc. Types of all the leading makes of arc lamps, open and enclosed, lightning arresters, and transformers, are kept in this laboratory.

The machinery is driven by the Payne engine and the 20-horse power Manchester motor mentioned above. Steam and electricity for these machines are furnished by the College power plant, located in the opposite wing of the same building. This plant consists of an 85-horse power Corliss engine, driving an 18-kw. Lundell generator, a 30-kw. Weston generator and a 30-kw. General Electric Company's multipolar generator. This station furnishes power to ten motors ranging from 3 to 30-horse power. These motors are used at different points on the College property for a variety of purposes, such as pumping water, driving agricultural machinery, supplying power for machine shop, wood shop, textile department, etc. Several of these are at a considerable distance from the power station, thus furnishing examples of electrical transmission of power. Three of these, 7-horse power each, were built by students. In addition to power for driving motors, the same generators furnish electricity for lighting the barracks and other College buildings. Students have access to this plant, and are thus enabled to see the practical workings of a combined electric light and power plant, and to test its efficiency.

The aim of the course is to make practical as well as theoretical electrical engineers.

(The division of Electrical Engineering will calibrate free of charge any voltmeter or ammeter that may be sent to the College for that purpose.)

REQUIREMENTS.—Special students desiring to pursue the electrical engineering courses must be prepared in mathematics as far as plane trigonometry for the Junior course, and must have a working knowledge of the calculus for the Senior course.

DRAWING.

MR. HANCOCK.

MR. LEE.

Freshman Class.

FREE-HAND DRAWING.—Graded exercises in sketching from plaster casts and other objects in pencil, charcoal and ink.

MECHANICAL DRAWING.—Exercises in the use of drawing instruments; working drawings of simple parts of machines from objects; geometrical problems with circles and straight lines; lettering.

Sophomore Class.

MECHANICAL DRAWING.—Working drawings of machines or parts of machines from sketches and specifications.

DESCRIPTIVE GEOMETRY.—Problems with lines and planes; simple solids in simple positions; intersection and development of surfaces; shades and shadows; axonometric projection and perspective.

Junior Class.

MECHANICAL DRAWING.—Working drawings of machines from sketches and specifications; drawings of the steam engine; dynamo electric machines; plans and details of bridges and buildings.

Senior Class.

MECHANICAL DRAWING.—Working drawings of machines from sketches and specifications. Work is assigned with reference to the course of study the student is pursuing. Drawings required in graduation theses.

Equipment.

The drawing rooms occupy the entire third floor of the Mechanical building, 51x69 feet. The third and fourth floors of the tower are also used as dark room and blue-print room, respectively. The free-hand and mechanical drawing rooms are equipped to accommodate 35 students each, with cases, boards, T-squares, etc., for over 200. Students are allowed the use of necessary instruments and apparatus free of charge.

FORGE AND FOUNDRY.

MR. BOWMAN.

Freshman Class.

BOTH TERMS.—Forge Work.—The course in forging begins with instruction in the names of tools and building and managing fires. Graduated exercises are then taken up, including drawing out, upsetting, bending, punching, twisting, welding of iron, welding of steel, welding of steel and iron, annealing, hardening, tempering, case-hardening, bluing and browning. Some work is then done in ornamental forging. The practical instruction is supplemented, during the progress of the course, by lectures and notes on the principles involved, and the details of the best forge practice are thoroughly explained.

Sophomore Class.

BOTH TERMS.—Foundry Work.—Students are taught the names and uses of tools; tempering of molding sand; molding and patching of molds. Patterns of various shapes and sizes are used to illustrate the different principles of molding, venting and gating; the use of risers, pressure gates, skim gates, gagers, chaplets, facing sands; feeding of castings; core making; grading and mixing of iron; charging and managing the cupola. Four weeks are devoted to work in the brass foundry. The practical instruction is supplemented by a course of lectures.

Equipment.

FORGE SHOP.—This is a room, 37x60 feet, situated in a wing of the Mechanical building. It is equipped with 18 Buffalo forges and steel-faced anvils, with sets of hammers, tongs, swages, fullers, flatters, etc. Continuous blast is furnished by a Buffalo blower driven by an electric motor. Steel hoods and stacks, which enter ventilators on the roof, serve to carry off the smoke by natural draft. The shop is also supplied with vises, swage blocks, emery wheel, bending cone, etc. □

FOUNDRY.—The foundry occupies a room, 43x50 feet, adjoining the forge shop. It is equipped with a 26-inch Victor Colliau cupola, capable of melting 2,500 pounds of iron per hour: a brass furnace with its complement of tongs, crucibles, etc.; a crane of two tons capacity; ladles, flasks of different sizes, and twelve complete sets of molder's tools. The Buffalo blower in the forge shop also furnishes blast for the cupola.

MACHINE SHOP.

MR. POATS.

Junior Class.

BOTH TERMS.—Instruction begins at the bench with exercises in chipping and filing. Castings and drawings are given the student and he is required to chip and file each casting into the

exact form and size represented by the corresponding drawing. From bench work the student is advanced to machine work, where he is taught turning, polishing, drilling, threading, planing, milling, etc., in iron, brass, and steel. In all cases the exercises are required to be worked to drawings. The graded course of exercises is designed to teach the fundamental principles and practices of machine metal-work from the simplest to the most difficult operations. After completing this course of exercises, work is begun in the construction of tools, apparatus, etc.

Senior Class.

BOTH TERMS.—The Senior year is devoted to more advanced work in the construction of engines, dynamos, motors, and other machines. The student is encouraged to work from his own designs as far as possible, but is guided and directed by the instructor in charge.

Equipment.

The machine shop is located on the first floor of the Mechanical building. It contains fifteen benches with vises and kits of tools, and the following machines: 18 in.x12ft. engine lathe, 18in.x8ft. engine lathe, 14 in.x6ft. engine lathe, two 14in.x6ft. improved engine lathes, four 14in.x6ft. Lodge and Shipley engine lathes, 10in.x4ft. pattern-maker's lathe, 15in.x8ft. speed lathe, 18-in. drill press, 28-in. back-gear'd drill press, 22in.x22in.x6ft. Powell planer, universal cutter and tool-grinder, 15-in. crank-shaper, Springfield emery-grinder, 12-in. power hack-saw, 36-in. power grindstone. The motor which drives this machinery was built by students. A general tool-room contains all the necessary tools for use with the various machines.

WOOD WORK.

MR. BARNES.

The course in wood work does not aim to make the student a skilled carpenter, but rather to teach the proper use of tools, and impress the importance of working to exact dimensions. At the same time, it gives a certain amount of manual dexterity, useful in every vocation.

Freshman Class.

BOTH TERMS.—Names and uses of tools; graded exercises in carpentry, joining, and wood turning; construction of articles from working drawings; use of turning lathe and other simple machinery; construction of boxes, desks, etc., involving dovetailing, gluing, polishing; turning of cups, vases, indian clubs and other wooden articles.

Sophomore Class.

BOTH TERMS.—Use of wood-working machinery, as planer, jointer, circular saw and molding machine; pattern work with graded exercises, showing use of and reason for draft, halving, core prints and core boxes; patterns for machines under construction; advanced turning and cabinet work.

Equipment.

The wood shop occupies a two-story wing of the Mechanical building, 45x100 feet. The lower story contains a 25-kw. electric motor, band saw, planer, 16-in. jointer, double-headed sharper, molding machine, mortising machine, tenoning machine, emery grinders, etc. The upper room, used for class work, contains a universal circular saw, two scroll saws, thirteen turning lathes with a set of eight tools for each, eighteen manual training benches with case of tools for each. Power is furnished by a 5-horse power electric motor. A large dry-kiln furnishes seasoned lumber for use at all times.

PURE MATHEMATICS.

PROFESSOR CLINKSCALES.

ASSISTANT PROFESSOR BRODIE.

This course presupposes a thorough knowledge of arithmetic and of algebra through quadratics.

Freshman Class.

FIRST TERM.—Complete Algebra. Quadratics (reviewed); simple indeterminate equations; inequalities; theory of exponents; logarithms; proportion and variation; series, binomial theorem; continued fractions; theory of limits; indeterminate coefficients; exponential theorem; equations in general. Text-book, Wentworth's Complete Algebra.

SECOND TERM.—Plane Geometry. Rectilinear figures; circles; similar figures; comparison and measurement of surfaces of polygons; regular polygons and circles. Special attention is given to the formation, on the part of students, of the habit of clear and accurate reasoning and concise expression. Text-book, Wentworth's Geometry.

Sophomore Class.

FIRST TERM.—Trigonometry. Functions of acute angles; right triangle; goniometry; oblique triangle; applications. Text-book, Wentworth's Trigonometry and Tables.

SECOND TERM.—Higher Algebra. Solid Geometry. Planes and solid angles; polyhedrons: cylinders and cones; spheres, spherical polygons and pyramids; volume. Text-books, Wentworth's Higher Algebra and Wentworth's Geometry.

For agricultural students, the mathematical course ends with the Sophomore year.

Junior Class.

FIRST TERM.—Analytical Geometry. Points and right lines in a plane: points and right lines in space; transformation of coordinates: circle; parabola; ellipse; hyperbola; higher plane curves; surfaces of revolution. Text-book, Wentworth's Analytical Geometry.

SECOND TERM.—Differential Calculus. Differentiation of algebraic functions; transcendental functions; successive differentiation and development of functions; functions of two variables; tangents and asymptotes; maxima and minima; radius of curvature; evolutes and involutes; envelopes.

Integral Calculus.—Elementary forms of integration; rational fractions; integration of irrational fractions; successive reduction; integration of functions of two variables; lengths of curves; areas of plane curves; rectification of curves; cubature of volumes. Text-book, Taylor's Differential and Integral Calculus.

APPLIED MATHEMATICS—CIVIL ENGINEERING.

ASSISTANT PROFESSOR BRODIE.

Sophomore Class.

PLANE SURVEYING.—All regular students take plane surveying on completing trigonometry in the Sophomore year. This course includes the general principles and fundamental operations of surveying with compass, level and transit. The object of the instruction is to make practical surveyors, familiar with both the mathematical principles involved and the art of combining the theory and the practice. The field work includes actual surveys of extensive tracts of land, of which the areas are computed and accurate plats are drawn. Experience is given in retracing the lines of old surveys, in numerous problems of laying out and dividing up land, and in locating intricate, irregular boundaries. Practice is also had in section leveling, laying out terraces, ditches, etc. Ample training is

here furnished for the needs of agricultural students, and a good preparation is given for the higher work of the engineering courses. Text and reference books: Davies-Van Amringe's Surveying; Gillespie's Surveying.

Junior Class.

BOTH TERMS.—Use and adjustment of transit, stadia, solar compass, and plane-table; topographic surveying with transit and stadia; railroad topography; triangulation; geodesy; city and hydrographic surveying; map and plan drawing, topographical symbols, map lettering, etc.

Highway Engineering.—Location, construction and maintenance of the country roads and city streets; advantages of various materials for road covering; effects of grades and surface upon the cost of transportation; plans and specifications; practical problems in change of grade and relocation, from surveys of existing roads.

Theory of Railway Construction.—Preliminary and location surveys; location from contour map; laying out of simple and compound curves; setting of slope stakes; computation of earthwork; switches; turnouts; theory of economic location; effects of grades, curves and length upon the cost of operation. Text and reference books: Johnson's Higher Surveying; Gillespie's Roads and Railroads; Burns' Highway Construction; Carhart's Field Engineering; Wellington's Economic Location.

Senior Class.

BOTH TERMS.—Railway Engineering. Surveys are made for a line of railway a mile or more in length; the necessary plans, profiles and cross-sections are prepared; grades are determined, curves laid out, slope stakes set, and all the needed measurements made to enable the student to compute the excavations and embankments, and to estimate the cost of construction.

Roofs and Bridges.—Mechanics of construction; derivation of practical formulas; foundations; stability of walls and arches; analytical and graphical investigation of stresses in framed structures; calculation of stresses in plate girders, Howe, Pratt, Warren, and lattice bridges and various kinds of roof trusses; bridge designing

Hydraulic Engineering.—The laws of pressure and flow of water and other principles of hydrostatics and hydraulics are taught, both theoretically and practically; measurement of volume of discharge by weir or miner's inch; turbines and other water wheels; construction of water-works for towns and cities; building of dams and reservoirs and computation of their stability; irrigation.

Text and reference books: Wheeler's Civil Engineering; Merriman's Mechanics of Materials; Merriman and Jacoby's Roofs and Bridges; Merriman's Hydraulics.

Equipment.

The collection of field instruments contains the following: Two 6-inch vernier compasses; 20-inch wye level; engineer's transit, with stadia; plane-table, with 9-inch telescope, vertical circle and stadia; drainage level; 12-foot self-reading leveling and stadia rod; 12-foot New York leveling rod; 10-foot cross-section rod, graduated; Gurley's clinometer, reading to degrees; two surveyor's chains; engineer's chain; standard 100-foot steel tape, graduated to hundredths of a foot; and full supply of ranging poles, flag poles, and other accessories. There are also sets of drawing instruments for office work.

In addition to the drawing done under the immediate direction of the instructor in this division, the regular work in drawing and designing provided for civil engineering students is arranged with special view to their exact needs.

ENGLISH.

PROFESSOR FURMAN.

ASSISTANT PROFESSOR M'LUCAS.

The purpose of the course in English is to enable the student to acquire the power to express his thoughts with clearness, precision and force; and to cultivate in him a taste for good literature. Elementary English grammar and the rudiments of composition are taught in the Subfreshman classes.

Freshman Class.

Lockwood's Lessons in English; Strang's Exercises; readings from Irving and Scott; exercises in composition; supplementary readings.

Sophomore Class.

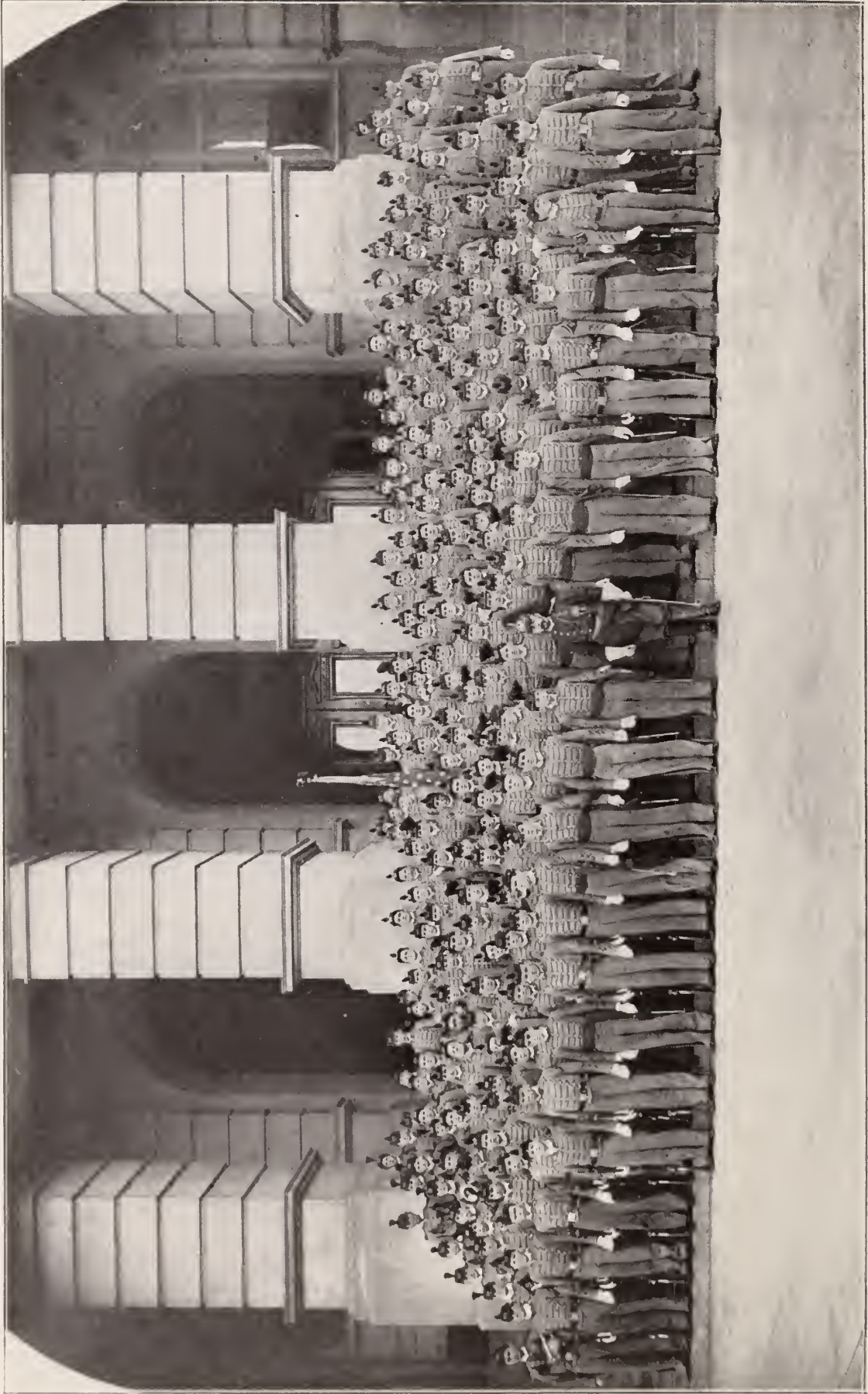
Clark's Practical Rhetoric; weekly exercises in composition; supplementary readings.

Junior Class.

Pancoast's English Literature; Hawthorne and Lemmon's American Literature; critical study of Macaulay's Warren Hastings; monthly essays; supplementary readings.

Senior Class.

Study of Shakespeare; Dowden's Primer and the reading of three plays; advanced rhetoric; monthly essays; supplementary reading; exercises in elocution.



CORPS OF CADETS.
(1896.)

HISTORY.

PROFESSOR MORRISON.

Freshman Class.

South Carolina History.—Text-book (Weber's) and lectures.
Commercial Geography.—Text-book (Tilden's) and lectures.

Sophomore Class.—(Mechanical).

Civics.—Text-book (True and Dickinson's Our Republic) and lectures.

General History.—Text-book, Myers', begun.

Junior Class.—(Agricultural).

Civics.—Text-book (True and Dickinson's Our Republic) and lectures.

General History.—Text-book, Myers', begun.

Senior Class.

General History.—Text-book, Myers', completed.

Economics.—Text-book, Walker's Political Economy, Briefer Course.

MILITARY SCIENCE AND TACTICS.

ACTING PROFESSOR SHANKLIN.

Junior and Senior Classes.

BOTH TERMS.—The course in military instruction, as prescribed and followed, is both theoretical and practical. The theoretical instruction, given by recitations and lectures, includes the subjects of organization and administration, grand and minor tactics, logistics, castrametation, military engineering, gunnery and pyrotechnics, military history, etc. The practical instruction includes infantry drill, in the school of the soldier, the company, the battalion and the evolutions of the regiment, in both close and extended order, target practice and guard duty, and in the manual of the piece in light artillery drill. Practice is also given in signaling with the flag.

In addition to the benefit which the general government derives from the military instruction given at this and other colleges, it is believed that the discipline enforced, the habits of punctuality and obedience inculcated, the improvement in

bearing and appearance of those instructed, and also the practice in directing and commanding others, which nearly all in course of time get, is of immense benefit to the students individually.

TEXTILE INDUSTRY.

PROFESSOR BEATY.

The increasing development of cotton manufacturing in South Carolina, and the consequent demand for more thorough technical training, has made it seem wise to the Trustees to incorporate in the work of the College a course of instruction and practical training in this industry.

While at present the purpose is to give attention to the processes of cotton manufacture only, the plans are laid so as to admit of a future expansion of this department to cover a wider field in textile arts, including the manufacture of wool, silk, linen and other fibers.

The aim of the Textile course (see "Courses of Study") is to impart the elements of a good general and scientific education; and then to proceed to the applications of the sciences and arts to the textile industry.

Junior and Senior Classes.

Varieties and classification of cotton; structure and composition of the fiber; selection of cotton for different kinds of work; effects of ginning and baling cotton; reasons, methods, advantages and disadvantages of the different methods of mixing cotton

Construction and arrangement of different systems of picker-rooms; construction, care, use and operation of automatic feeders, with and without trunk attachments. The opener, intermediate and finisher picker; calculations and adjustments of speeds, setting, draft and capacity.

CARDS.—The evolution of the card; different kinds of cards; roller and cleaner card; stationary top flat card; revolving top flat card; their purpose, use and construction; setting and speeds of the various parts; capacity calculations for draft, etc.; study of card clothing; manner of numbering; different wires for different purposes; care of cards and clothing.

RAILWAY HEADS AND DRAW FRAMES.—Object, use, construction, advantages and disadvantages of railway heads; comparing metallic and leather rolls; explanation of stop motions and eveners; calculations. Principle of drawing slivers; object



TEXTILE BUILDING.

and purpose of draw frames; method of setting the rolls; size and speed of rolls; distribution of draft between the rolls; stop motions and calculations.

FLY FRAMES.—Construction, care and operation; explanation of traverse motion, builder motion and differential motion; calculations for draft, twist, lay, taper and other gears; flyer-lead and bobbin-lead frames.

SPINNING.—Theory and principles of spinning; the ring spinning frame; the mule spinning frame; the spindle; the ring; size, setting and speeds of rolls; method of covering rolls; capacity, cost and calculations.

Object of spooling; warping; different kinds of warps; pattern warps. Twisting, two or more ply, wet and dry. The slasher; its construction, use and operation, with various sizing compounds for different fabrics.

WEAVING.—Plain loom; drop box; dobby looms. Pattern analysis; cloth structure; designing of cloth; plain weaving; twills and diagonals; foundation weaves, etc. Designing paper and methods of representing weaves on it. Calculations for weight, width and take-up of warps in loom; calculations for harness and reeds; laying out of mills and proportioning of machinery throughout.

CHEMISTRY AND DYEING.—This course is supplementary to the course in general chemistry pursued by all students in the Sophomore year. The aim is to give a sound elementary knowledge of the chemistry underlying these industries, and to train the student to apply this knowledge to advantage. Chemistry is the basis of dyeing, and the so-called "secrets" of the dyer are only his practical knowledge of the chemical action of dye-stuffs.

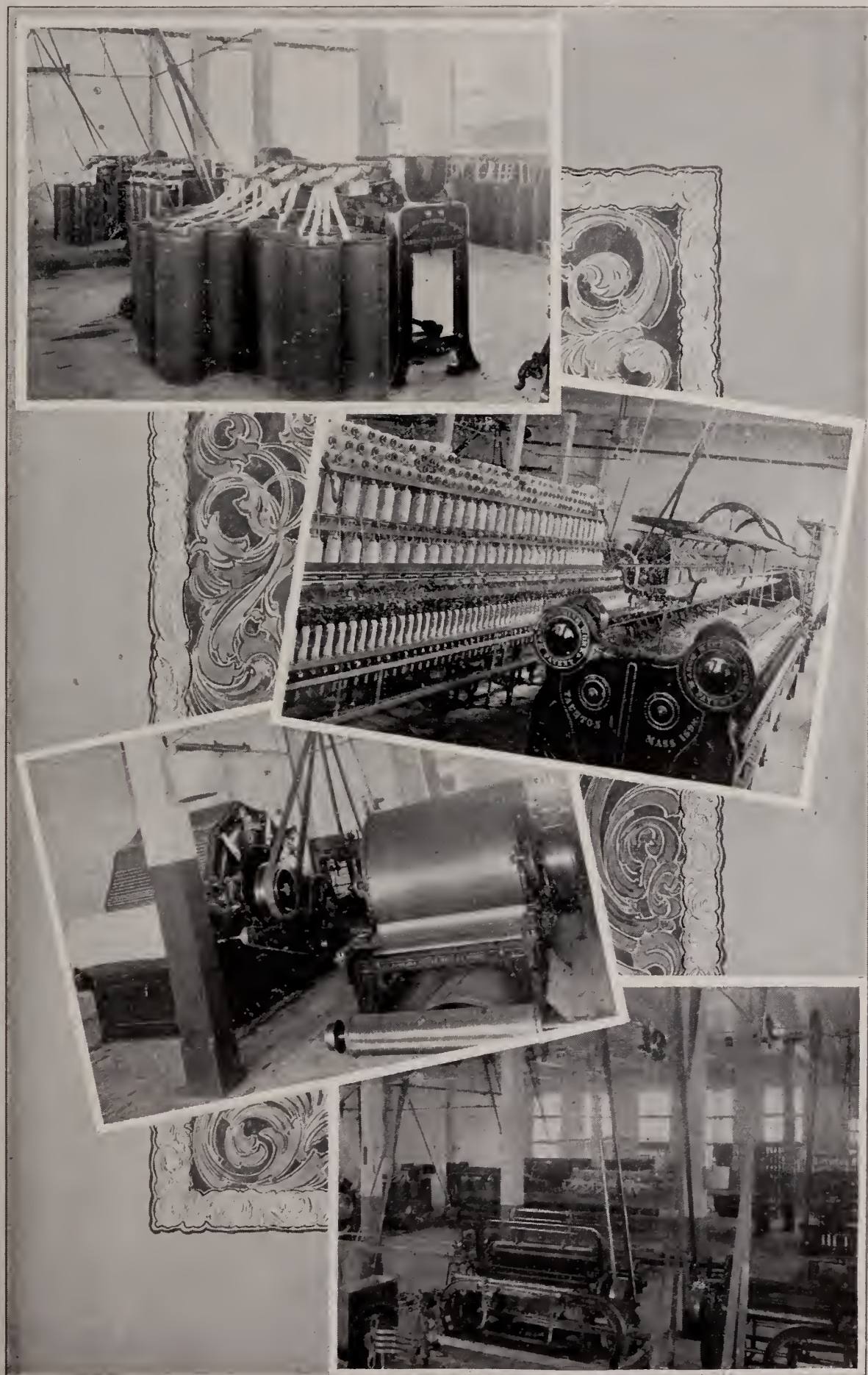
The student is made thoroughly acquainted with the physical and chemical nature of the cotton fiber, and the effects of the various dyestuffs with which it is to be treated. The course includes inorganic and such leading facts of organic chemistry as are needful; testing and valuation of dye-stuffs; coal tar colors; qualitative and quantitative analysis; cotton dyeing, including practical dyeing of small pieces of cotton, yarns and cloth. A regular dye plant will be installed in this department in the near future.

Equipment.

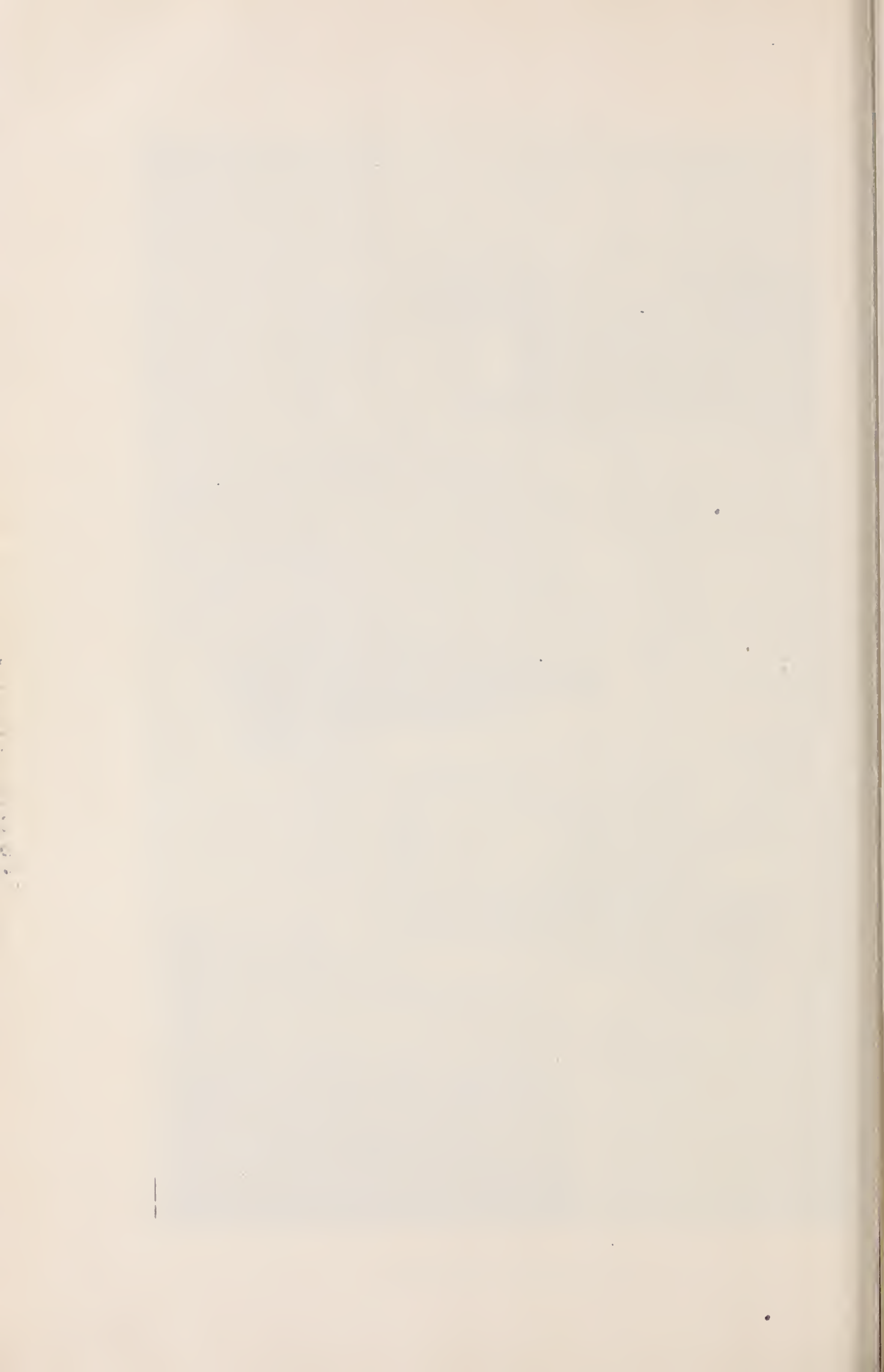
The Textile building is a two-story brick structure of modern cotton mill design, lighted by electricity, heated by steam, and protected from fire by automatic sprinklers. There is also a 10,000-gallon steel tank in the tower to be used as a further protection. On the first floor are the recitation-rooms, the carding and spinning departments, and the office. The dyeing and weaving departments are on the second floor.

The following machinery has been installed: One set A. T. Atherton Machine Company's 40-inch braker and finisher lappers; one Mason

Machine Company's 40-inch revolving top flat card with 112 flats, 27-inch doffer; one Saco & Pettee Machine Company's 40-inch revolving top flat card, 112 flats, 27-inch doffer; one Mason's and one Saco & Pettee's single delivery railway heads with metallic top rolls; one Mason's and one Saco & Pettee's four-delivery draw frames with metallic top race and coiler heads; one Saco & Pettee's 40-spindle slubber frame with improved differential motion; one Saco & Pettee's 60-spindle speeder; one Saco & Pettee's 80-spindle fine roving frame; one Saco & Pettee's 128-spindle, $1\frac{3}{4}$ -inch rings, $2\frac{3}{4}$ -inch gauge, 6-inch traverse, combination warp and filling motion spinning frame with Rhodes and Chandles separators and kink arresters; one Mason Machine Company's 600-spindle mule spinning frame; one Mason's 112-spindle, $1\frac{1}{4}$ -inch rings, $2\frac{3}{4}$ -inch gauge, 6-inch traverse, combination warp and filling spinning frame with Doyle separators and kink arresters; one Saco & Pettee's 72-spindle spooler; one Draper & Co.'s 40-spindle spooler with all their latest improvements; one Draper & Co.'s combination wet and dry twister; one Draper Machine Company's warper; one D. A. Tompkins Company's 50-spindle reel; two Draper & Co.'s Northrop looms with automatic warp stop motions and filling magazines; one lot of hand looms with 30-harness dobby attachment; one 30-inch top engine drive hydro extractor built by Schaum & Uhrlinger, and a complete dye plant; one complete Vorter humidifying plant. The machinery is driven by a 35-horse power Westinghouse electric motor.



IN TEXTILE BUILDING.



REGISTER OF STUDENTS, 1898-99.

Postgraduate Students.

Name.	County.
Gentry, C. W.....	Spartanburg
Hanvey, G. A., Jr.....	Abbeville
Henry, D. H.....	Abbeville

Senior Class.

Name.	County.	Name.	County.
Calhoun, J. S....	Barnwell	Seigler, C. H.....	Aiken
Chreitzberg, C. K....	Charleston	Shealy, A. S....	Edgefield
Elder, M. L.....	York	Smith, H. G.....	Oconee
Hook, W. N.....	Orangeburg	Stribling, J. H.....	Pickens
Jeffares, J. W.....	Fairfield	Taylor, I. B.....	Greenwood
Lewis, J. E.....	Oconee	Thomson, J. C...	Washington, D. C
McLendon, R.....	Darlington	Turner, T. H.....	Barnwell
Mathis, A. J.....	Barnwell	Turnipseed, L. A....	Richland
		Walker, W. F.....	Barnwell

Junior Class.

Name.	County.	Name.	County.
Adams, W. G.....	Darlington	Kinsler, J. H.....	Richland
All, J. E....	Barnwell	Lawton, F. A.....	Hampton
Ayer, L. W.....	Berkeley	Lewis, G. P.....	Oconee
Cannon, R. S....	Newberry	Liles, S. E.....	Marlboro
Caughman, J. E....	Saluda	Mauldin, C. E.....	Greenville
Clinkscales, L. D	Oconee	Mauldin, L. O.....	Pickens
Dodd, H. B.	Ford, Ga	Maxwell, J. F.....	Anderson
Donaldson, J. R.....	Marlboro	Pearman, S. D.....	Anderson
Epps, H. G.....	Williamsburg	Rawl, B. H.. . . .	Lexington
Fletcher, B. A.....	Marlboro	Riggs, A. F.....	Orangeburg
Foster, J. B.. . . .	Union	Sloan, S. M.....	Oconee
George, W. D.....	Lexington	Sullivan, J. F.....	Spartanburg
Gray, H. K.....	Barnwell	Walker, J. N.....	Barnwell
Gray, J. J.	Greenville	Wells, C. H.....	Orangeburg
Kennedy, J. L.....	Laurens		

Sophomore Class.

Name.	County.	Name.	County.
All, P. H.	Barnwell	Lawton, T. O.	Hampton
Anderson, J. W.	Chester	Lawton, W. J.	Hampton
		Lewis, J. B.	Oconee
Blakeney, J. R.	Lancaster	McLendon, W. E.	Darlington
Blease, J. W.	Saluda	McMaster, J. G.	Fairfield
Boykin, L.	Kershaw	Mathis, H. M.	Barnwell
Brookbanks, T. A.	Charleston	Matthews, E. M.	Fairfield
Brown, J. H.	Oconee	Mauldin, C. W.	Pickens
Burgess, W. A.	Clarendon		
Butler, A. A.	Charleston	Newell, W. H.	Anderson
		Newman, H. S.	Somerset, Va
Cannon, H. L.	Darlington	Newman, Q. B.	Anderson
Chapman, J. H.	Greenville		
Cheatham, J. E.	Abbeville	Pickett, E. H.	Oconee.
Chreitzberg, H. R.	Charleston		
Clinkscales, G. B.	Oconee	Quattlebaum W. M.	Fairfield
Connor, L. E.	Charleston		
		Ramsey, H. L.	Spartanburg
Darlington, W. R.	Barnwell	Reeves, R. N.	Fairfield
Devlin, O. E.	Greenwood	Roddey, J. H.	York
Douglass, C. B.	Fairfield		
Duckworth, J. C.	Anderson.	Sally, J. E.	Orangeburg
		Sanders, W. A.	Chester
Fair, W. N.	Edgefield	Sarratt, J. A.	Cherokee
Fickling, C. J.	Barnwell	Scott, W. H.	Edgefield.
Forsythe, R. G.	Brevard, N. C	Searson, R. P., Jr.	Barnwell
Forsythe, W. C.	Brevard, N. C	Shaw, T. C.	Abbeville
		Spencer, J. H.	York
Glenn, T. K.	Anderson		
Gunby, J. W.	Orangeburg	Thurston, W. R.	Memphis, Tenn
		Tinsley, A.	Spartanburg
Harling, J. F.	Edgefield	Tison, H. R.	Barnwell
Hill, W. G.	Abbeville	Turner, G. C.	Barnwell
Hughes, E. T.	Orangeburg		
		Zeigler, M. E.	Orangeburg
Kaigler, J. G.	Lexington		
Klugh, G. F.	Greenwood		

Freshman Class.

Name.	County.	Name.	County.
Austin, W. J.	Abbeville	Brooks, U. R., Jr.	Richland
		Burgess, J. M.	Clarendon
Bamberg, G. E.	Bamberg		
Bamberg, W. P.	Bamberg	Campbell, E. G.	Charleston
Barre, B. H.	Lexington	Carpenter, L. F.	Anderson
Barrett, A. R.	York	Carr, A. B.	Richland
Barringer, F. J.	Florence	Carwile, J. P.	Abbeville
Beaty, J. S.	Fairfield	Chapman, W. E.	Greenville
Bell, E. P.	Anderson	Clyburn, T. L.	Lancaster
Bellinger, E. W.	Barnwell	Cole, W. F.	Rockingham, N. C
Bellows, C. A.	Beaufort	Cope, S. B.	Orangeburg
Bethea, A. M.	Marion	Cothran, W. B.	Greenwood
Bowers, A. O.	Saluda	Crawford, F.	Pickens
Boykin, E. B.	Darlington	Cromer, B. C.	Anderson
Brockmann, E., Jr.	Richland	Culp, F. B.	York

Name.	County.	Name.	County.
DaCosta, E. J.....	Beaufort	Mitchell, M. M.....	Aiken
Davis, S. A.....	Oconee	Mixson, J. C.....	Richland
DeSaussure, F. G....	Charleston	Monroe, M. M.....	Marion
Douthit, C.....	Anderson	Moore, J. F.....	Greenville
Earle, J. C.....	Anderson	Munro, T. H.....	Union
Ellen, D. M.....	Marion	Nimmons, R. L.....	Oconee
Emery, J. R.....	Beaufort	Norris, F. K.....	Orangeburg
Evans, T. B.....	Marion	O'Dell, T. R.....	Pickens
Finger, E. R.....	Spartanburg	Odiorne, J. W.....	Greenville
Franks, H. M.....	Laurens	Oliver, N.....	Darlington
Gettys, J. E.....	York	Owings, C. B.....	Laurens
Gibbes, F. H.....	Richland	Pearman, T. E.....	Anderson
Gibson, J. E.....	Darlington	Phillips, T. R.....	Orangeburg
Gignilliat, C. N.....	Oconee	Poe, H. T., Jr.....	Greenville
Gillespie, L. D.....	Pickens	Reese, F. C.....	Tacoma, Fla
Goodman, W. P.....	Oconee	Rice, G. P.....	Bamberg
Gorman, J. C.....	Richland	Robertson, S. M....	Pickens
Gregory, S. E.....	Lancaster	Rodger, J. M.....	Union
Gunby, F. M.....	Orangeburg	Rogers, A. M.....	Marion
Hardin, G. H.....	Oconee	Rogers, A. P.....	Marion
Harper, J. W.....	Savannah, Ga	Rogers, F. C.....	Marion
Harrall, H. H.....	Chesterfield	Royall, A. D.....	Charleston
Haselden, G. E.....	Marion	Sally, D. H.....	Aiken
Haselden, L. B.....	Marion	Sanders, H. M.....	Newberry
Hawkins, S. S.....	Spartanburg	Seigler, J. V.....	Aiken
Hogg, T. F.....	Barnwell	Shannon, P. N.....	Kershaw
Humbert, D. G.....	Pickens	Shealy, E. M.....	Union
Hunter, J. D.....	Anderson	Sitton, M. A.....	Anderson
Hunter, M. N.....	Anderson	Slattery, J. I.....	Greenville
Jennings, D.....	Charleston	Smith, E. E.....	Charleston
Jennings, H. B., Jr..	Charleston	Sneed, W. F.....	Charleston
Jordan, F. M.....	Oconee	Spencer, T. B.....	York
King, W. D.....	Anderson	Starling, W. D., Jr..	Richland
Kittles, V. H.....	Hampton	Stephens, J. R.....	Greenwood
Kohn, D.....	Orangeburg	Stewart, S. C.....	Pickens
Larsen, E. J.....	Colleton	Stokes, H. G.....	Hampton
Lawson, C. S.....	Union	Stone, R. B.....	Edgefield
Lawton, F. B.....	Hampton	Stribling, Jones H..	Oconee
Lewis, D. G.....	Oconee	Sullivan, D. A. J....	Spartanburg
Lewis, D. S.....	Oconee	Templeton, W. G....	Abbeville
Little, H. F.....	Spartanburg	Tinsley, J. B.....	Union
Lumpkin, S. H.....	Fairfield	Walker, N. D.....	Union
Lynah, J., Jr.....	Savannah, Ga	Wallace, D. M.....	Union
McCrary, H. N.....	Anderson	Watkins, J. B.....	Saluda
McCullough, C. E....	Darlington	Watson, E. M.....	Saluda
McCullough, L. H....	Williamsburg	Watson, L. G.....	Saluda
McGregor, G. T.....	Richland	Wertz, J. C.....	Edgefield
McMakin, J. W.....	Spartanburg	Whitney, J. B.....	Augusta, Ga
McMaster, T. M.....	Fairfield	Wilson, H. A.....	Sumter
Martin, J. E.....	Charleston	Wingard, A. K.....	Richland
Marvin, H. W.....	Colleton	Witherspoon, R. H.	Anderson
Matthews, E. C.....	Barnwell	Wolfe, W. S.....	Orangeburg
Meador, J. D.....	Union	Woodward, J. H....	Barnwell
Mitchell, G. F.....	Charleston		

Subfreshman Class B.

Name.	County.	Name.	County.
Aldrich, R. M.....	Barnwell	Lee, C. H.....	Marion
Alford, E. P.....	Florence	Legare, S. C.....	Colleton
Allen, J. E.....	Barnwell	Legerton, C. W.....	Charleston
Andrews, M. H.....	Sumter	Long, B. F.....	Saluda
Andrews, W. M.....	Abbeville		
Ballenger, G. W.....	Oconee	McCarley, E.....	Richland
Bamberg, H. F.....	Bamberg	McLaurin, A. B....	Kershaw
Bero, C., Jr.....	Beaufort	Mancke, W. S.....	Richland
Bethea, A. S.....	Marion	Marjenhoff, F. D...	Charleston
Blohme, J. C., Jr...	Charleston	Milam, V. L.....	Laurens
Boineau, C. E.....	Beaufort	Milling, A. J.....	Greenwood
Boykin, E. M., Jr...	Kershaw	Moise, E. W., Jr...	Sumter
Bundrick, D. C.....	Newberry	Moore, B. A.....	Chesterfield
		Moore, J. S.....	Chesterfield
Callison, J. A.....	Greenwood	Moorer, W. M.....	Dorchester
Cobb, W. W.....	Anderson	Moses, A. J.....	Sumter
*Collins, S. J.....	Spartanburg		
Connelley, A. C.....	Charleston	Odell, J. F.....	Beaufort
Crawford, J. A.....	Lavonia, Ga	Parler, P. A.....	Orangeburg
Crawford, R. C.....	Pickens	Patrick, W. H.....	Bamberg
Croft, R. B.....	Aiken	Paul, S.....	Beaufort
Cummings, J. P.....	Fairfield	Pegues, B. F.....	Marlboro
		Pegues, E. S.....	Marlboro
Duboise, J. C.....	Colleton	Pitts, E. A.....	Laurens
Dye, L. G.....	Chester	Pollitzer, R. H.....	Beaufort
Easterling, A. L....	Marlboro	Prioleau, J. F.....	Beaufort
Emery, J. H.....	Beaufort		
Evans, S. W.....	Marlboro	Robinson, B. C.....	Pickens
		Roof, S. P.....	Lexington
Fitch, M. W.....	Charleston	Sahlmann, H. C....	Charleston
Fitzsimmons, A. R..	Charleston	Schroder, E....	Aiken
Ford, S.....	Fairfield	Schroder, W.....	Aiken
Forsythe, J. A., Jr..	Colleton	Self, W. O.....	Edgefield
Fuller, L. C.....	Laurens	Simms, W. G., Jr..	Barnwell
		Smith, M. P.....	Charleston
Gandy, R. A.....	Darlington	Smoak, J. E.....	Orangeburg
Gandy, T. S.....	Darlington	Smoak, J. J.....	Orangeburg
Garrison, W. D., Jr..	Anderson	Stanley, T. E., Jr..	Marion
George, P. A.....	Marion	Stone, C. B.....	Edgefield
Gilbert, W. F.....	Spartanburg	Stoppelbein, L. E..	Charleston
Glenn, J. P.....	Spartanburg	Stubbs, A. J.....	Sumter
Goodman, J. C.....	Oconee	Stubbs, C. E., Jr..	Sumter
Goodwin, J. M.....	Greenville		
		Thomas, A. E.....	Chester
Hamilton, F. P.....	Union	Traxler, D. B.....	Florence
Hart, B. A.....	Barnwell	Tribble, J. W.....	Anderson
Haynesworth, R. B..	Florence		
Honour, G. M.....	Charleston	Wallace, J. M.....	Union
Humphreys, D. K...	Greenville	Wannamaker, J. G..	Orangeburg
		Watts, E. B. C.....	Laurens
Jefferies, S.....	Cherokee	Wightman, W. M..	Orangeburg
Jenkins, B. M., Jr...	Barnwell	Williamson, J. E...	Sumter
Jenkins, P. F., Jr..	Greenville	Wingo, J.....	Spartanburg
		Woodward, J. W...	Barnwell
Kaigler, B. H.....	Lexington	Wright, C. W.....	Laurens
Knight, B. F.....	Lancaster		
		Young, T. B.....	Florence
Lanham, J. F.....	Clarendon	Yow, L.....	Martin, Ga
Larsen, G. A.....	Colleton		

*Died June, 2, 1899.

Subfreshman Class A.

Name.	County.	Name.	County.
Adams, J. D.....	Lancaster	Keenan, D. V.....	Charleston
Alderman, W. H....	Aiken	Kelly, W. C.....	Darlington
Allen, L. M.....	Spartanburg	Kennedy, M. F., Jr..	Charleston
Arthur, C. K.....	Richland		
Berrie, E. F.....	Aiken	Lamar, E. W.....	Aiken
Bissell, W. S.....	Charleston	Lay, J. T.....	Oconee
Boone, J. E.....	Beaufort	Leatherwood, J. H..	Spartanburg
		Long, G. F.....	Fairfield
		Long, J. A.....	Abbeville
Carter, A. H., Jr....	Charleston		
Carter, L. E.....	Charleston	McDavid, J. P.....	Greenville
Clowney, J. B.....	Fairfield	McFadden, C. B....	York
Clowney, R. H.....	Fairfield	McNelly, E. N.....	Darlington
Clyburn, H. F.....	Kershaw	Malphrus, C. E.....	Hampton
Coleman, W. A.....	Charleston	Marchant, A. A.....	Orangeburg
Coney, R. J.....	Dorchester	Martin, B. E., Jr....	Laurens
Connelley, J. S.....	Charleston	Martin, J. W.....	Anderson
Connor, L. S., Jr....	Orangeburg	Miles, F. A.....	Marion
Cooper, C. B.....	Richland	Milling, J. E.....	Fairfield
Cornwell, C. W.....	York		
Courtney, G. S.....	Aiken	Oakley, A. W., Jr...	Aiken
Culp, F. B.....	York		
Culp, H. M.....	Lancaster	Patterson, J. W.....	Barnwell
		Pegues, H.....	Marlboro
Davis, W. M.....	Hampton	Purvis, E. O.....	Florence
Dial, R. T.....	Richland		
Donald, J. F.....	Charleston	Richardson, J. H....	Anderson
Duke, H. C.....	Pickens	Richardson, J. N....	Laurens
Easterling, B. B....	Barnwell	Shaw, J. L.....	Barnwell
Easterling, B. C....	Marlboro	Simmons, B. F.....	Charleston
		Simmons, C. G.....	Charleston
Fairy, L. D.....	Orangeburg	Slater, G. H.....	Orangeburg
Fennell, J. B.....	York	Stone, J. M.....	Edgefield
Fore, T. E.....	Marion		
Foster, E. W.....	Marion	Tallon, B. M.....	Sumter
Funchess, B. D.....	Orangeburg	Thees, H. C.....	Charleston
		Thompson, R. L.....	Chester
Gillespie, S. W.....	Sumter	Traynham, T. G....	Laurens
Hall, I. H., Jr.....	Charleston	Walker, H. M.....	Charleston
Harrell, E. D.....	Laurens	Watson, W. B.....	Greenville
Harvin, F. M.....	Clarendon	Welling, I. T.....	Darlington
Hartzog, R. B.....	Bamberg	Werts, T. M.....	Newberry
Hill, J. M.....	Bamberg	White, B. L., Jr....	Charleston
Holley, J.....	Aiken	Whiteley, C. A. A...	Charleston
		Williams, A. M.....	Charleston
Ihly, M. D.....	Hampton	Williams, C. A., Jr..	Beaufort
Jernigan, R. J.....	Beaufort	Wilson, J. C.....	Darlington
		Zeigler, C. E.....	Sumter

Students in Irregular Courses.

Name.	County.	Name.	County.
Burgess, Dr. J. H ...	Pickens	Postell, J. A.....	Colleton
Cole, A. B.....	Rockingham, N. C.	Redfearn, J. C	Chesterfield
Duckett, J. O	Greenwood	Rutledge, T. P....	Charleston
Hair, J. K.....	Barnwell	Sanders, A. H.....	Kershaw
Johnston, O. H.....	Anderson	Stacey, C. C.....	Cherokee
Long, J. F.....	Anderson	Stribling, J. C., Jr..	Oconee
McKinley, F. J.....	Charleston	Tompkins, T. W....	Richland
Moise, W. L.....	Sumter	Welborn, H. G.....	Lexington, N.C
Norris, A. P.....	Greenville	Zeigler, M. E	Orangeburg

Summaries.

BY CLASSES

Postgraduates.....	3	Subfreshmen B.....	103
Seniors.....	17	Subfreshmen A	83
Juniors	29	Irregular Students.....	18
Sophomores.....	58		
Freshmen.....	135	Total	446

BY COUNTIES IN SOUTH CAROLINA.

Abbeville	10	Hampton.....	9
Aiken.....	13	Kershaw	6
Anderson	25	Lancaster.....	6
Bamberg.....	7	Laurens	12
Barnwell.....	28	Lexington.....	7
Beaufort.....	13	Marion	16
Berkeley.....	1	Marlboro.....	9
Charleston	42	Newberry	4
Chester	5	Oconee	22
Chesterfield	4	Orangeburg.....	24
Cherokee.....	3	Pickens.....	13
Clarendon	4	Richland.....	17
Colleton	7	Saluda.....	7
Darlington	14	Spartanburg	15
Dorchester.....	2	Sumter.....	11
Edgefield	10	Union.....	11
Fairfield	14	Williamsburg	2
Florence	6	York	11
Greenville	14		
Greenwood.....	8	Total, South Carolina.....	432

BY STATES.

South Carolina.....	432	Florida.....	1
Georgia.....	6	District of Columbia.....	1
North Carolina.....	4		
Virginia.....	1	Total.....	446
Tennessee	1		

Church Affiliation.

Methodist.....	137—34	per cent.
Baptist.....	126—31	“ “
Presbyterian.....	53—13	“ “
Episcopal.....	50—12	“ “
Lutheran.....	15—4	“ “
Catholic.....	9—2	“ “
Associate Reform Presbyterian.....	8—2	“ “
Israelite.....	4—1	“ “
Christian.....	2— $\frac{1}{2}$	“ “
Unitarian.....	2— $\frac{1}{2}$	“ “
Universalist.....	1— $\frac{1}{4}$	“ “

The above numbers do not include 39 students who failed to furnish information as to church affiliation.

Occupations of Parents.

Farmers.....	228—51	per cent.
Merchants.....	56—12	“ “
Officers.....	30—7	“ “
Clérks.....	25—6	“ “
Manufacturers.....	22—5	“ “
Physicians.....	14—3	“ “
Lawyers.....	14—3	“ “
Ministers.....	12—3	“ “
Insurance Agents.....	8—2	“ “
Drummers.....	4—1	“ “
Miscellaneous.....	33—7	“ “

Total.....446—100 per cent.

CLASS MARCHERS, SECOND TERM, 1898-99.

(Appointments based on class standing during the first term.)

Senior Class.

	1st Marcher.	2d Marcher.
Agricultural.....	J. C. Thomson.....	H. G. Smith.
Mechanical, Sec. A.....	L. A. Turnipseed.....	T. H. Turner.
Mechanical, Sec. B.....	C. K. Chreitzberg.....	J. S. Calhoun.

Junior Class.

Agricultural.....	C. E. Mauldin.....	F. A. Lawton.
Mechanical, Sec. A.....	A. F. Riggs.....	J. F. Sullivan.
Mechanical, Sec. B.....	W. G. Adams.....	S. E. Liles.
Textile.....	S. D. Pearman.....	J. R. Donaldson.

Sophomore Class.

Agricultural, 1st Sec.....	G. F. Klugh.....	C. J. Fickling.
Agricultural, 3d Sec.....	W. E. McLendon.....	C. W. Mauldin.
Mechanical, 2d Sec.....	W. A. Burgess.....	T. K. Glenn.
Mechanical, 4th Sec.....	Q. B. Newman.....	J. H. Roddey.

Freshman Class.

Section 1.....	W. E. Chapman.....	B. H. Barre.
Section 1A.....	J. C. Earle.....	F. Crawford.
Section 2.....	F. M. Gunby.....	C. N. Gignilliat.
Section 2A.....	W. D. King.....	D. Kohn.
Section 3.....	J. F. Moore.....	J. W. McMakin.
Section 3A.....	T. R. Phillips.....	C. B. Owings.
Section 4.....	E. M. Shealy.....	H. G. Stokes.
Section 4A.....	H. A. Wilson.....	E. M. Watson.

Subfreshman B.

Section 1.....	T. S. Gandy.....	J. P. Glenn.
Section 2.....	C. W. Legerton.....	A. B. McLaurin.
Section 3.....	A. E. Thomas.....	J. H. Woodward.

Subfreshman A.

Section 1.....	J. F. Donald.....	H. C. Duke.
Section 2.....	C. E. Malphrus.....	B. L. White.



REAR VIEW OF BARRACKS



REGIMENTAL ORGANIZATION.

June, 1899.

For instruction in infantry tactics and military police and discipline, the cadets are organized into a regiment of two battalions of three companies each, under the Commandant of Cadets, each battalion being commanded by an instructor of the College detailed for this duty.

The officers and non-commissioned officers are selected from those cadets who have been most studious, soldier-like in the performance of their duties, and most exemplary in their general deportment. In general, the officers are taken from the Senior class, the sergeants from the Junior class, the corporals from the Sophomore class. The figures indicate relative rank.

COMMANDANT OF CADETS.

MAJOR G. SHANKLIN..... Acting.

COMMISSIONED STAFF.

T. H. TURNER Lieutenant and Adjutant.
R. MCLENDON..... Lieutenant and Quartermaster.

NON-COMMISSIONED STAFF.

J. F. SULLIVAN..... Sergeant-Major.
W. D. GEORGE..... Quartermaster-Sergeant.

FIRST BATTALION.

MAJOR W. W. KLUGH.

CAPTAINS.

Company A.	Company B.	Company C.
A. S. SHEALY(1),	J. C. THOMSON(3),	W. F. WALKER(6).

LIEUTENANTS.

A. J. MATHIS(6),	W. N. HOOK(4),	M. L. ELDER(2).
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FIRST SERGEANTS.

J. E. CAUGHMAN(1),	S. D. PEARMAN(3),	L. O. MAULDIN(2).
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SERGEANTS.

R. S. CANNON(6),	J. B. FOSTER(4),	J. H. KINSLER(1),
J. N. WALKER(7),	E. T. HUGHES(9),	F. A. LAWTON(5),
W. C. FORSYTHE(11),	E. H. PICKETT(15),	J. F. MAXWELL(8).
L. W. AYER(18),		

CORPORALS.

W. L. MOISE(4),	G. F. KLUGH(6),	R. G. FORSYTHE(2),
J. W. BLEASE(19),	J. R. BLAKENEY(8).	C. B. DOUGLASS(12),
	H. R. TISON(9),	J. H. RODDY(15),
	W. G. HILL(16),	W. J. LAWTON(11).

SECOND BATTALION.

MAJOR S. M. MARTIN.

CAPTAINS.

Company D.	Company E.	Company F.
C. K. CHREITZBERG(2),	L. A. TURNIPSEED(5),	I. B. TAYLOR(4).

LIEUTENANTS.

J. S. CALHOUN(1),	J. W. JEFFARES(5),	A. P. NORRIS(3).
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FIRST SERGEANTS.

S. E. LILES(4),	H. G. EPPS(6),	C. E. MAULDIN(5).
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SERGEANTS.

J. R. DONALDSON(2),	T. A. BROOKBANKS(10),	G. P. LEWIS(13),
C. H. WELLS(3),	B. A. FLETCHER(12),	T. O. LAWTON(16).
J. C. DUCKWORTH(14),	C. W. MAULDIN(17),	

CORPORALS.

H. L. RAMSEY(3),	H. R. CHREITZBERG(1),	C. J. FICKLING(10),
J. F. HARLING(5),	J. H. SPENCER(7),	W. E. MCLENDON(18),
J. E. SALLY(14),	J. H. CHAPMAN(13),	T. C. SHAW(21),
W. R. DARLINGTON(20),	W. N. FAIR(17),	J. G. KAIGLER(22).

SOUTH CAROLINA EXPERIMENT STATION.

BOARD OF FERTILIZER CONTROL.

HON. J. E. TINDAL, HON. J. E. WANNAMAKER, GOV. W. H. ELLERBE.
J. P. SMITH, Secretary.

OFFICERS OF EXPERIMENT STATION.

HENRY S. HARTZOG, President of College.....Director
J. S. NEWMAN.....Vice-Director and Agriculturist
M. B. HARDINChief Chemist
F. S. SHIVER, Ph.G.....Assistant Chemist
J. F. C. DUPRE.....Horticulturist
R. N. BRACKETT, Ph.D.....Assistant Chemist
G. E. NESOM, B.Sc., D.V.MVeterinarian
*C. C. McDONNELL, B.S.....Assistant Chemist
A. P. ANDERSON, M.S., Ph.D.....Botanist and Bacteriologist
*B. F. ROBERTSON, B.S.....Assistant Chemist
C. M. CONNER, B.S.....Assistant Agriculturist
ERNEST WALKER, B.S. Agr....Entomologist and Assistant Horticulturist
J. S. PICKETT.....Experiment Station Foreman
JOHN N. HOOK, Secretary and Librarian.

*Engaged in fertilizer analysis.

Extracts from the "Hatch Act."

Extracts from the act of Congress, known as the "Hatch Act," approved March 2, 1887, for the establishment of Agricultural Experiment Stations in connection with Colleges established in the several States under the provisions of the Congressional Act, approved July 2, 1862, and known as the *first* "Morrill bill."

SECTION 1. * * * That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on the subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established under direction of the college or colleges or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July 2, 1862, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to said act, a department to be known and designated as an "Agricultural Experiment Station." * * *

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. * * * It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures. * * *

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore described, the sum of \$15,000 per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of Section 8 of this act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the Treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887; *provided, however*, that out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement or repair of a building or buildings necessary for carrying on the work of such station, and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

* * * * *

SEC. 7. That nothing in this act shall be construed to impair or modify the legal relation existing between any of said colleges and the Government of the States or Territories in which they are respectively located.

SEC. 8. * * * And in case any State shall have established under the provisions of said act of July 2 aforesaid an agricultural department or experiment station in connection with any university, college or institution not distinctively an agricultural college or school, and such State shall have established or shall hereafter establish a separate agricultural college or school, which shall have connected therewith an experimental farm or station, the Legislature of such State may apply, in whole or in part, the appropriation by this act made to such separate agricultural college or school, and no Legislature shall by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of money authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grant; *provided*, that payments of such installments of the appropriation herein made as shall become due to any State before the adjournment, of the regular session of its Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this act shall be held or construed as binding the United States to continue any payments from the treasury to any or all the States or institutions mentioned in this act, but Congress may at any time amend, suspend or repeal any or all the provisions of this act.

Experiments, Etc., for 1898.

For a full account of experiments conducted, analyses made, bulletins issued, and other work of the Experiment Station for the past year, see Annual Report for 1898.

Chemical Analyses, 1897 and 1898.

Summary of the work of this year compared with that of last year:

	1897.	1898.
Official fertilizer samples.....	272	314
Farmers' fertilizer samples.....	44	46
Waters.....	95	70
Phosphate rocks.....	2	2
Ores and minerals.....	14	22
Marls.....	.....	2
Ashes.....	1	.....
Clays and sand.....	4	1
Miscellaneous.....	3	1
	435	458

Official Samples of Fertilizers.

The number of samples analyzed this year is 314. The analyses are given in full in *Bulletin 35*.

The general results compared with those of last year are as follows:

CLASSIFICATION.

	1897.	1898.
Complete fertilizers.....	117	141
Acid phosphates.....	59	63
Acid phosphates with potash.....	34	50
Kainits	22	20
Cottonseed meals.....	40	39
Nitrate of soda.....	.....	1
Total.....	272	314



POULTRY YARDS.

NOV 11 1891

PUBLICATIONS OF THE SOUTH CAROLINA EXPERIMENT STATION.

(Numbers marked thus * are exhausted.)

Bulletins of the Station are sent free to all citizens of the State requesting them.

Old Series.

- | | | |
|------|---|--|
| 1886 | } | Report of Experiment Farm. |
| 1888 | { | No. 1. *Tests of varieties of cotton.
No. 2. *Tests of commercial seeds.
No. 3. *Analyses of fertilizers and feeding-stuffs.
*Annual report. |
| 1889 | { | No. 4. *Entomology.
No. 5. *Oats and wheat.
No. 6. Hog cholera.
No. 7. Meteorology. |
| 1890 | { | No. 8. Chemical statistics of corn crop in South Carolina.
Maize fodder ensilage; cow-peas as a forage crop.
Composition of soja bean vines.
Annual report. |

New Series.

- | | | |
|------|---|---|
| 1891 | { | No. 1. *Analyses of commercial fertilizers, Part 1.
No. 2. *Cotton experiments with varieties and fertilizers.
No. 3. *Analyses commercial fertilizers, Part 2.
No. 4. Fertilizer tests with wheat.
Annual report. |
| 1892 | { | No. 5. Methods of keeping sweet potatoes.
No. 6. Analyses of commercial fertilizers.
No. 7. Experiments with wheat and oats.
Annual report. |
| 1893 | { | No. 8. Investigation chemical composition cottonseed meal.
No. 9. Experiments with Irish potatoes.
No. 10. Notes on varieties of beans.
No. 11. Analyses commercial fertilizers, Part 1.
No. 12. Cooperative soil tests of fertilizers.
No. 13. Analyses commercial fertilizers, Part 2.
No. 14. Experiments with corn.
Annual report. |
| 1894 | { | No. 15. Fertilizer experiments with corn.
No. 16. Experiments with tomatoes.
No. 17. Analyses commercial fertilizers.
No. 18. Fertilizer experiments with cotton.
Annual report. |
| 1895 | { | No. 19. Dairying.
No. 20. Analyses commercial fertilizers.
No. 21. Technical.
No. 22. Colic in horses and mules.
Annual report. |

- | | | | | |
|------|---|---------|--|-------------------------------------|
| 1896 | { | No. 23. | Lameness in horses. | |
| | | No. 24. | Analyses commercial fertilizers, in two parts. | |
| | | No. 25. | *Distemper in horses and mules. | |
| | | No. 26. | *Founder in horses and red water in cattle. | |
| | | No. 27. | *Wounds and their treatment. | |
| | | | Annual report. | |
| 1897 | { | No. 28. | The sweet potato as a starch-producer. | |
| | | No. 29. | Analyses commercial fertilizers. | |
| | | No. 30. | Determination of starch in the sweet potato. | |
| | | No. 31. | Hog cholera and swine plague. | |
| | | No. 32. | Protection and improvement of worn soils. | |
| | | | Annual report. | |
| 1898 | { | No. 33. | Tests of Dairy methods and apparatus. | |
| | | | Comparative tests of butter-fat. | |
| | | No. 34. | Sugar beets. | |
| | | No. 35. | Analyses commercial fertilizers. | |
| | | | No. 36. | Diseases of plants. |
| | | | No. 37. | Wheat. |
| 1899 | { | No. 38. | Asparagus rust in South Carolina. | |
| | | No. 39. | Suggestions to auxiliary clubs. | |
| | | No. 40. | Farm manures for cotton. | |
| | | No. 41. | Rice blast and a new rice smut. | |
| | | No. 42. | Varieties of cotton. | |
| | | | No. 43. | Analyses of commercial fertilizers. |

FREE ANALYSES, INFORMATION, ETC.

The various departments of the College and Experiment Station will furnish, free of charge, advice and information on any topic pertaining to general agriculture, horticulture, botany, entomology, veterinary science, dairying, stock breeding, feeding, etc.; also analyses of fertilizers, marls, clays, waters, and other substances, assays of ores, determinations of rocks and minerals, tests of bricks, cements, building stones, illuminating oils, calibration of electrical instruments, etc.

The departments can not undertake to analyze soils, stomachs or other parts of poisoned animals, nor to make bacteriological examinations.

All inquiries and requests should be addressed to the President, giving explicit account of conditions, difficulties, etc., as far as possible, and the matter will be referred promptly to the proper department for further correspondence. Before sending samples of any kind for examination or analysis, it is best to write for instructions, and thus avoid trouble and delay.

1-10-11

CLEMSON COLLEGE

OF

SOUTH CAROLINA.

AGRICULTURAL, MECHANICAL, TEXTILE.

CATALOGUE 1900-1901.

EIGHTH YEAR.



COLUMBIA, S. C.
THE STATE COMPANY,
1901.

COLLEGE CALENDAR.

Session 1901-1902.

Session begins Wednesday, September 11, 1901.

Second Quarter begins Monday, November 18, 1901.

Thanksgiving Day, Thursday, November 28, 1901.

Christmas Vacation, one week.

Second Term (Third Quarter) begins Wednesday, Jan. 29, 1902.

Fourth Quarter begins Friday, April 4, 1902.

Session ends, Commencement, June 6-8, 1902.

OFFICIAL TITLE.

THE CLEMSON AGRICULTURAL COLLEGE
OF SOUTH CAROLINA.

Postoffice and Telegraph Office: CLEMSON COLLEGE, S. C.

Freight and Express Office: CALHOUN (Southern R'y), S. C.

COMMENCEMENT, 1901.

Programme.

FRIDAY, JUNE 21ST.

11 A. M., Address to Graduating Class, SENATOR B. R. TILLMAN.
8.30 P. M., Alumni Address, H. B. DODD.

SATURDAY, JUNE 22ND.

11 A. M., Commencement Exercises and Delivery of Diplomas.
8.30 P. M., Glee Club Entertainment.

SUNDAY, JUNE 23RD.

11 A. M., Baccalaureate Sermon, REV. D. N. McLAUCHLIN.
8.30 P. M., Farewell Exercises, Y. M. C. A.
Address by REV. J. G. BECKWITH.

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BOARD OF TRUSTEES.

Life Members-

NAME.	COUNTY.
HON. R. W. SIMPSON, President	Anderson
SENATOR B. R. TILLMAN	Edgefield
HON. R. E. BOWEN	Pickens
HON. D. K. NORRIS	Anderson
HON. J. E. BRADLEY	Abbeville
HON. M. L. DONALDSON	Greenville
HON. J. E. WANNAMAKER	Orangeburg

Term Expires 1904.

HON. J. E. TINDAL	Clarendon
HON. D. T. REDFEARN	Chesterfield
HON. JESSE H. HARDIN	Chester

Term Expires 1902.

HON. H. M. STACKHOUSE	Marlboro
HON. A. T. SMYTHE	Charleston
HON. L. A. SEASE	Lexington

P. H. E. SLOAN, Secretary and Treasurer, Clemson College, S. C.

EXECUTIVE COMMITTEE.

D. K. NORRIS, J. E. TINDAL, H. M. STACKHOUSE,
 R. E. BOWEN, J. E. BRADLEY.

FINANCE COMMITTEE.

R. W. SIMPSON, A. T. SMYTHE, M. L. DONALDSON.

BOARD OF VISITORS 1900-1901.

*FIRST DISTRICT—Hon. W. H. Thomas, Charleston.

SECOND DISTRICT—Hon. Harry Hammond, Aiken.

THIRD DISTRICT—Hon. Geo. S. Mower, Newberry.

FOURTH DISTRICT—Hon. Jas. T. Williams, Greenville.

FIFTH DISTRICT—Hon. W. F. Stevenson, Chesterfield.

SIXTH DISTRICT—Hon. W. C. Coker, Darlington.

SEVENTH DISTRICT—Hon. R. I. Manning, Sumter.

*Died March 19, 1901.

FACULTY.

(For 1901-1902.)
(In order of seniority.)

HENRY S. HARTZOG, L L. D.,

President.

M. B. HARDIN, (Virginia Military Institute),

Professor of Chemistry.

C. M. FURMAN, (A. B., Furman University),

Professor of English.

W. S. MORRISON (A. B., Wofford College),

Professor of History.

J. V. LEWIS (B. E., University of N. C.; S. B., Harvard; Johns Hopkins),

Professor of Geology.

J. S. NEWMAN (University of Virginia),

Professor of Agriculture.

J. H. M. BEATY (South Carolina College),

Professor of Textile Industry.

P. T. BRODIE (B. S., A. B., Furman University),

Professor of Mathematics.

G. SHANKLIN (South Carolina Military Academy),

Professor of Military Science and Tactics.

W. M. RIGGS (B. S., E. M. E., Alabama Polytech. Inst.),

Professor of Electrical Engineering.

P. N. BRACKETT (A. B., Davidson College; Ph. D., Johns Hopkins),

Assistant Professor of Chemistry.

A. M. REDFEARN (Furman University; B. S., Wake Forest College; M. D.,

L. I. College Hospital),

Instructor in Physiology.

F. S. SHIVER (Ph. G., University of South Carolina),

Instructor in Agricultural Analysis.

ALBERT BARNES (M. M. E., Cornell),

Assistant Professor of Mechanical Engineering.

J. S. McLUCAS (A. B., South Carolina College; A. B., A. M., Harvard),

Assistant Professor of English.

C. M. CONNER (B. Agr., Univ. of Missouri; B. S., Mich. Agr. College),

Assistant Professor of Agriculture.

T. G. POATS (Miller School, Virginia; University of Virginia),

Instructor in Physics.

G. E. NESOM (B. Sc., Mississippi Agricultural and Mechanical College; D. V. M., Iowa State Veterinary College),

Instructor in Veterinary Science.

F. D. FRISSELL (Philadelphia Textile School),

Instructor in Weaving and Designing.

WILLS JOHNSON (Miller School, Virginia),

Instructor in Forge and Foundry.

P. H. ROLFS (M. Sc., Iowa State College),

Instructor in Botany.

*C. B. WALLER (A. M., Wofford College; Vanderbilt University),

Assistant Professor of Mathematics.

A. P. ANDERSON (M. S., Univ. of Minnesota; Ph. D., Univ. of Munich),

Instructor in Entomology.

D. WISTAR DANIEL (A. B., Wofford College),

Assistant Professor of English.

C. C. NEWMAN (Clemson College),

Instructor in Horticulture.

R. E. LEE (B. S., Clemson College),

Instructor in Drawing.

C. S. WRIGHT (B. L., Georgia School of Technology),

Instructor in Machine Shop.

L. C. RAIFORD (Ph. G., Md. Col. of Pharmacy; Ph. B., Brown Univ.),

Instructor in Dyeing.

SAMUEL MANER MARTIN (S. C. Military Academy),

Assistant Professor of Mathematics.

S. W. REAVES (South Carolina Military Academy; B. S., University of N. C.; A. B., Cornell),

Assistant Professor of Mathematics.

H. H. KYSER (B. S., E. and M. E., Alabama Polytech. Inst.),

Assistant Professor of Electricity.

J. H. HOOK (B. S., Clemson College),

Acting Instructor in Woodwork.

W. W. KLUGH (B. S., Clemson College),

Assistant Instructor in Drawing.

E. P. EARLE (B. S., Clemson College),

Assistant Instructor in Forge and Foundry.

M. E. BRADLEY (A. B., Erskine College),

Tutor.

A. B. BRYAN (B. S., Clemson College),

Tutor in English.

J. E. HUNTER (B. S., Clemson College),

Tutor.

*Absent on leave for one year, during which time his place will be filled by Mr. F. T. Dargan

OFFICERS OF ADMINISTRATION.

HENRY S. HARTZOG,
President.

M. B. HARDIN,
Head of Department of Chemistry and Natural Science.

J. S. NEWMAN,
Head of Agricultural Department.

W. M. RIGGS,
Director of Mechanical Department.

J. H. M. BEATY,
Director of Textile Department.

G. SHANKLIN,
Commandant.

P. H. E. SLOAN,
Treasurer and Purchasing Agent.

BOARD OF HEALTH.

HENRY S. HARTZOG,
President.

DR. A. M. REDFEARN,
Surgeon.

DR. P. H. E. SLOAN,
PROF. M. B. HARDIN,
PROF. J. S. NEWMAN.

GENERAL INFORMATION.

Origin and Objects.

In 1886 a convention of the farmers of South Carolina passed a resolution advocating the establishment of an Agricultural College. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who died in 1888, leaving as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and about \$80,000 in other securities, for the purpose of establishing an Agricultural College.

The Legislature passed an act which became a law in November, 1889, accepting the bequest. The College opened July 6, 1893, with an enrollment during its first session of 446 students.

The object of the College, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and applications of the sciences bearing upon agriculture and mechanics; and to give the breadth and culture necessary for a rounded education, courses are provided in history, economics and English.

It is considered of the utmost importance that students be taught, not only theoretical methods, but practical work in these methods. To this end, as much time is devoted to laboratory, and shop-work, field-instruction, and other practical exercises, as to lectures and recitations.

Location.

The College is located on the dividing line between Oconee and Pickens counties, in the picturesque foot-hills of the Blue Ridge. It has an elevation of about 900 feet above sea-level, and commands an excellent view of the mountains to the north and west, some of which attain an altitude of nearly 5,000 feet. The climate is invigorating and healthful, and the surroundings are in every way favorable to the highest physical and mental development. The buildings are located on the old Fort Hill homestead of John C. Calhoun.

The College is one mile from Calhoun, a station on the main line of the Southern Railway, and two miles from Cherry's, on the Blue

Ridge Railroad. By means of these roads and their connections, the College is easily accessible from all parts of the State. It is also connected by telephone with Calhoun and Pendleton, and thence by telegraph with all parts of the country. The postoffice is conveniently situated on the campus, and receives five daily mails.

College Grounds and Buildings.

GROUNDS.—The College grounds occupy about two hundred acres of land, including the campus, sites of buildings and residences, and grounds for military drill and outdoor athletics. The campus is laid out in walks, drives and lawns, and is shaded by a beautiful grove of native forest trees.

In memory of the lamented R. T. V. Bowman, late instructor in forge and foundry work, the new athletic and parade grounds have been named "Bowman Field."

The principal buildings of the College are heated by steam, lighted by electricity, and supplied with water connections for laboratory use and for protection against fire.

AGRICULTURAL HALL is a three-story brick structure, 130x140 feet, trimmed with gray sandstone. It contains twenty-two rooms, including recitation rooms, library and reading room, literary society halls, laboratories for botany, entomology, physics and mineralogy, besides the offices of the President, the Commandant and the Secretary and Treasurer. Adjoining this building is Memorial Hall, the College chapel, which has a seating capacity of 1,000. It is used for religious services and as an assembly-room.

THE MECHANICAL BUILDING is a substantial brick structure of liberal dimensions, containing about 30,000 square feet of floor space. On the first floor are the mechanical laboratory, machine-shop, forge-shop, foundry, and the power and light station. On the second floor are the offices and recitation-room, while the wood-shop occupies the whole of a two-story wing, 45x100 feet. The third floor is entirely occupied by the division of drawing.

THE CHEMICAL LABORATORY is a two-story brick building, fifty by eighty feet, covered with slate, and finished inside with Southern pine. On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, one is a balance-room for students, one an office, and one is fitted up as a laboratory for advanced students. The basement is used for assaying and for storage. On the second floor there are five rooms: qualitative laboratory, 36x48 feet, with a pitch of seventeen feet in the clear, lecture-room, professor's laboratory, an office, and a room for gas analysis.

An addition to the Chemical Laboratory, about the size of the present building, is now in process of erection, and will be ready for occupancy before the opening of the next session.

THE TEXTILE BUILDING is a two-story brick structure of modern cotton-mill design, protected from fire by automatic sprinklers and a 10,000-gallon water-tank in the tower. The first floor is occupied by recitation-rooms, carding and spinning rooms, and office. On the second floor are the dyeing and weaving departments.

THE CADET BARRACKS is a three-story brick building containing 148 rooms for students, a dining-hall 134x44 feet, and a kitchen 50x37 feet. The building is heated by steam and lighted by electricity, and has an abundant supply of pure spring-water.

The rooms in barracks are furnished with single-width iron cots, mattresses, tables, chairs, wardrobes, buckets, pans, cups and mirrors. The dining-hall is well supplied with table-linen, silverware and china. The kitchen is equipped with modern appliances for culinary purposes.

The bath-rooms and closets are located in brick buildings apart from the barracks, and connected with it by covered gangways.

An addition to the barracks, 199x42 feet, containing 82 rooms, is now being built.

THE ELECTRICAL INSTRUMENT LABORATORY is a brick building of special design. It is arranged especially for delicate instrument work.

THE DYNAMO LABORATORY is a modern brick structure, 37x80 feet. Besides containing the dynamo electric machinery for instructional use, it also contains the electrical engineering lecture room.

THE HORTICULTURAL BUILDING, a two-story frame structure, contains the offices, class-rooms and collections of the horticultural division, and the local office of the United States Weather Bureau. There are also a spacious, well-equipped green-house, a canning-house, and a packing-house, with brick basement.

THE DAIRY BUILDING is a wooden structure of modern design, constructed especially to illustrate the most approved methods of dairy practice.

THE VETERINARY HOSPITAL is a commodious two-story frame building, 30x48 feet, with a basement 18x30 feet. It contains a dissecting-room, drug-room, an office, feed rooms, and apartments for an attendant.

THE HOSPITAL, located more than a quarter of a mile from the barracks, is a wooden building, especially designed for the purpose. It is lighted by electricity and has a thorough sewerage system.

The hospital is in the immediate charge of the College Surgeon, who is assisted by an experienced matron and a nurse, thus ensuring the best personal attention to each patient.

THE CALHOUN MANSION, the former residence of John C. Calhoun, is kept in honor of his memory, in accordance with the provisions of Mr. Clemson's will.

RESIDENCES.—Nine two-story brick buildings, nine six-room cottages, and sixteen smaller houses furnish residences for professors and other officers of the College.

Five additional five-room cottages are now being built.

CLEMSON CLUB HOTEL.—The College Hotel, a commodious building, overlooking the campus, is operated as a club by some members of the faculty. In addition to furnishing a home for the members of the club, it is open the entire year to a limited number of transients.

THE LAUNDRY is a brick building specially constructed and fitted with the improved machinery of a modern steam laundry. It is operated exclusively for students.

EXPERIMENT STATION OFFICES.—A wooden building, containing offices, a library, and storage and seed rooms, is provided for the use of officers of the Experiment Station.

FARM BUILDINGS.—The College is provided with commodious barns and other farm buildings of modern design, which are described more fully in connection with the equipment for instruction in agriculture.

THE POULTRY YARDS are supplied with incubators, brooders and other modern appliances. There are thirty-six pens, 20x32 feet, each containing a house 6x8 feet. For every four pens there is a run 80x150 feet, all enclosed with poultry cabled wire.

Water Supply.

There are two sources from which water is obtained. The general supply is collected from springs through iron pipes into a reservoir, from which it is pumped into a stand-pipe eighty feet high, whence it is distributed.

Drinking water is pumped from a bold spring, in a continuous stream, directly into the barracks. It is by this means furnished fresh, pure, and cold.

The waste water is used for flushing the sewer-pipes, which empty into the Seneca river a half-mile away.

Tuition.

The following extract is taken from Section 1120, Revised Statutes of South Carolina, 1893, Volume I, setting forth the powers

and duties of the Board of Trustees: "They shall charge each student a tuition fee of forty dollars per annum; * * * indigent students shall not be required to pay said tuition fee."

In accordance with this law, residents of South Carolina are granted free tuition upon presentation of the following certificate, properly signed:

CERTIFICATE OF INABILITY TO PAY TUITION.

THIS IS TO CERTIFY, *That I am unable to pay tuition for my.....in the Clemson Agricultural College for the session of 1901-1902.*

.....
Father or Guardian.

I hereby certify that, to the best of my knowledge and belief, the above statement is true.

.....
County Auditor.

All other students pay the tuition fee of \$40.00 per session. .

Blank certificates will be furnished upon application to the President.

Expenses for the Session of 1900-1901.

For Free-tuition Students..	\$100 42
For Tuition-paying Students..	140 42

These charges are due and payable in advance on the first day of each quarter, as follows:

September 11, 1901, or on day of entrance:

Incidental Fee..	\$ 5 00
Medical Fee..	5 00
Uniform..	22 92
Board and washing, first quarter.. . .	16 88

Total for Free-tuition Students..	\$49 80
Tuition, first quarter..	\$10 00

Total for Tuition-paying Students.. . . .	59 80
---	-------

November 18, 1901:

Board and washing, second quarter...\$16 88

Total for Free-tuition Students... .. 16 88
 Tuition, second quarter... ..\$10 00

Total for Tuition-paying Students... .. 26 88

January 29, 1902:

For Free-tuition Students, third quarter ... 16 88

For Tuition-paying Students... .. 26 88

April 4, 1902:

For Free-tuition Students, fourth quarter... 16 88

For Tuition-paying Students... .. 26 88

In addition to the above charges a deposit of \$2.00 is required of all students upon entrance, according to the following resolution of the Board of Trustees:

Resolved, That at the beginning of a session each student be required to deposit \$2.00 with the Treasurer, to be known as a breakage fee. Whenever the property of the College is damaged, the actual cost of the repair of the property damaged shall be charged to the student who damaged the property. If, however, the responsibility can not be fastened upon any student, the amount of the damage shall be prorated equally among all the students. At the end of the session any amount to the credit of a student shall be returned to him.

The price of uniforms is subject to fluctuations of the market.

To the above must be added the cost of books and stationery, which may be obtained at the Cadet Exchange at wholesale prices; also \$1.50 for diploma, payable on graduation.

Remittances should be made in cash, money-order, or New York Exchange, *not by local checks*, to P. H. E. SLOAN, Treasurer, Clemson College, S. C.

A deduction will be made for board and washing only when a student is absent one month or more.

Uniform.

The College uniform is of cadet gray of the West Point pattern, except that the College button is used. For military full dress, the cadet officers wear a plume and sash, and the non-commissioned officers and privates a pompon. This uniform is made of the best Charlottesville mills goods, is neat, and, considering the make and material, is very inexpensive.

Requirements for Admission.

Each candidate must be at least fifteen years of age, except where two brothers apply, one being over fifteen and the other not under fourteen.

After September, 1901, students under sixteen years of age will not be received.

Certificates of good moral character are required of all candidates not known to members of the faculty; and if the candidate comes from another college, this certificate must show that he was honorably discharged.

For admission into the Freshman class thorough proficiency is required in arithmetic, elementary algebra, English grammar, geography and history of the United States. The text-books recommended to those preparing to enter the Freshman class are Wells' Academic Arithmetic, Wentworth's Algebra, Whitney-Lockwood English Grammar, Redway and Hinman's Natural Advanced Geography, Eggleston's History of the United States and its People.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption, or other contagious or communicable diseases, or permanent disability for manual labor or military duty.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow and two pillow-cases. Beds are single width.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.

Entrance Examinations.

All candidates for admission to the College must take the entrance examinations.

Certificates and diplomas will not be accepted in lieu of these examinations, but candidates are requested to bring them as corroborative evidence of preparation.

On other pages will be found typical examinations for entrance into the Freshman class. They will be useful in suggesting the character of preparation that an applicant should have.

REGULATIONS OF THE COLLEGE.

Reports.

Monthly reports are furnished to parents and guardians, giving the standing of students in all studies and in discipline. Reports are also issued at the end of each term, showing the grades, based upon class-work and examinations, in all studies. Parents will be advised to withdraw students who habitually shirk duties.

No student conditioned on any subject can be promoted to a higher class until all conditions are removed.

Conditioned students are allowed five days from the opening of every session in which to remove deficiencies; and during this period no conditioned student is allowed to attend regular class exercises.

No student is allowed to take the courses of any class more than twice, except by special permission of the faculty.

Any student taking a subject over waives the right to all previous records in that subject, and is placed upon the same footing as students taking the work for the first time.

No student failing of promotion is granted an irregular course that does not include all subjects on which he is conditioned.

All students who are put back into any class must take the full work of that class.

Any student desiring to change his course of study must apply for such change within one month from date of entrance.

Students are not allowed to change from the Agricultural to the Mechanical course and *vice versa* after the beginning of the Sophomore year.

Students making an average of 90 per cent. or more, in each study, for the year, have their names published at commencement as Distinguished.

The students who make the highest average grade during a term are appointed marchers of their respective sections for the succeeding term.

Irregular courses are not allowed to students in the Sub-Freshman class.

Any student absent from a recitation or lecture, for any cause except military duty, is marked zero. In case of absence on account of sickness or other providential cause, or participation in inter-

collegiate contests, the student has the privilege of making up the recitation, and the mark thus made is substituted for the zero.

All military drill and other practical exercises from which a student may be absent, except on account of military duty, must be made up, to the satisfaction of the instructor in charge. The mark for such make-up work cannot exceed 60 per cent., except in case of absence due to sickness, or other providential cause, or participation in intercollegiate contests. In these cases, the student, upon presenting the proper certificate from the President, is entitled to the grade actually obtained.

All students are required to purchase the text-books used in their classes, unless excused for special reasons by the instructors. Text-books are kept at the Cadet Exchange and are furnished to students at wholesale prices.

Matriculation is equivalent to a pledge to conform to the rules and regulations of the College.

Rules for the Appointment of Students.

In selecting the students who shall be notified to report to the College, the following rules, prescribed by the Board of Trustees, will govern:

1. Students must undergo a medical examination, and no student will be admitted who is not healthy and free from contagious diseases, including consumption.

2. Students will be apportioned among counties in proportion to representation in the House of Representatives, under the following rules and regulations:

- (a). Boys prepared to enter College classes will have preference over those who can only enter the Subfreshman class.

- (b). As between boys of equal preparation, the oldest will have the preference.

- (c). Other things being equal, the first applicants will receive permission to enter.

- (d). When a county has not sent its quota, the places thus left shall be apportioned among the other applicants.

- (e). Applicants not entering within ten days after the opening of the session will have their rights in the place given to applicants next on the roll.

Military Regulations.

In addition to the special regulations of the military department, cadets are subject to the following general regulations:

Cadets are subject to military discipline at all times, and are required to take part in drill, guard duty and other military exercises.

All regular students are required to board in the barracks, except those who live with their parents near enough to attend from their homes.

Each student is required to purchase the prescribed uniform; also a pair of over-shoes and a rubber coat. Students may provide themselves with such work-clothes as they desire.

Not more than three students are permitted to occupy the same room. Those occupying a room are consulted before another student is assigned to that room. A student not satisfied with his room-mates has the privilege of applying for permission to move to another room, and such applications are granted when practicable.

Cadets will at all times be respectful in their bearing to professors and other officers of the College.

The practice known as hazing is positively forbidden, and any cadet indulging in this practice will be expelled from the College.

Cadets are positively forbidden to use, or have in their possession, intoxicating liquors of any description.

The use of tobacco in any form by cadets is prohibited.

Profanity is positively forbidden.

Cards and all games of chance are positively forbidden.

All combinations of cadets for the purpose of censuring or praising one of their number are prohibited; also all combinations to defeat the purpose of any regulation of the College.

Fighting is positively forbidden. If any cadet shall consider himself wronged by another, or by a professor, or by an officer, he is to complain thereof in writing to the President, who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

Any cadet receiving 100 demerits during a term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

College Organization.

The College is organized into six general departments, as follows:

1. Academic Department.
2. Agricultural Department.

3. Mechanical Department.
4. Department of Chemistry and Natural Science.
5. Textile Department.
6. Military Department.

ACADEMIC DEPARTMENT.—The departments of instruction in Mathematics, English and History, which are common to all the courses, are collectively designated as "The Academic Department."

THE AGRICULTURAL DEPARTMENT comprises the following divisions: General Agriculture, including Animal Husbandry; Horticulture, Entomology, Botany, Dairying, Veterinary Science, Poultry Raising.

THE MECHANICAL DEPARTMENT comprises the divisions of Applied Mechanics, including Experimental Engineering, Physics, Electrical Engineering, Drawing and Designing, Forge and Foundry, Machine Shop, Woodwork.

THE DEPARTMENT OF CHEMISTRY AND NATURAL SCIENCE includes Chemistry, general, industrial, agricultural and analytical; Geology and Mineralogy.

THE TEXTILE DEPARTMENT comprises the courses in Textile Industry.

THE MILITARY DEPARTMENT comprises theoretical and practical instruction in Military Science and Tactics.

Experiment Station.

The State Experiment Station occupies a portion of the College farm, and affords valuable opportunities for instruction in the various divisions of the Agricultural department.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investigation being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom. The organization and work of the Experiment Station are described at the end of this catalogue.

Farmers' Institutes.

During the past year farmers' institutes were held, under the management of the College, in many Counties of the State. The President and Professors of Agriculture, Chemistry, Horticulture, Dairying, Veterinary Science, Botany and other members of the faculty have taken part in these institutes. The purpose has been to bring practical information to the farmer, and to give him the results of scientific investigation in the interest of Agriculture. The

success thus far attained is most encouraging, and leads to the hope that these institutes may become a permanent feature in the work of the College.

They will be continued during the coming vacation. A special institute of ten days' duration will also be held at the College during the month of August, in which, besides the College faculty, a number of prominent speakers from other States are expected to participate.

Farmers wishing an institute held in their County or community should write to the President.

Student Labor.

The College assumes no obligation to furnish employment to students for wages. Considerable manual labor is necessary to carry on the Agricultural and Mechanical departments of the College. When practicable students are employed in this work and are paid for it at eight cents an hour; but no student is allowed to undertake work that interferes with his College course. The number of students who apply for work always exceeds the number that can be employed. Students who enter late are at a special disadvantage in securing this work.

Religious Influences.

Every effort is made to surround the students with safe religious influences. There is preaching in Memorial Hall every Sunday morning by ministers of the different denominations, and chapel services are conducted every morning by the President and other members of the faculty. All students are required to attend these exercises unless specially excused.

A Sunday School, at which attendance is voluntary, also meets every Sunday morning, and students are encouraged and urged to attend.

Young Men's Christian Association.

This is a voluntary organization of the students, and is entirely under their management. The objects of the Association are to promote Christian fellowship among its members and aggressive Christian work among the students. The meetings are held in Memorial Hall every Sunday evening. The membership is of two classes—active and associate. A member in good standing of any evangelical church may become an active member of the Association, and any young man of good moral character may become an associate member. The faculty are in hearty sympathy with the work of

the Association, and render cheerful service when requested to do so. Parents and guardians are advised to encourage the students to join the Association as soon as they reach the College.

Care of the Sick.

The College Surgeon will keep parents fully informed of the condition of sick students. In case of serious illness parents are notified by telegraph.

Students have permission to call on the Surgeon at any time for advice and treatment. The Surgeon cannot undertake to notify parents every time a student reports to the hospital for medicine or rest, on account of some slight complaint; but parents may rest assured that they will hear from the Surgeon promptly in case of sickness of any consequence.

The health record for the past year has been exceptionally good, and many sanitary improvements have been made to insure the continued health of the students.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.

Library.

In the Agricultural building are a series of rooms specially constructed for the use of the Library. About 5,000 volumes of standard English literature, history, biography, general science, etc., and about 1,000 volumes of government publications are now on the shelves. The number of books is being added to each year. They have been recently classified and arranged, and excellent opportunity is now offered students for general and supplementary reading.

In recent purchases for the library special efforts have been made to procure all available books on South Carolina history and literature.

Museum.

In the Library suitable cases have been provided for the preservation of curios and relics. The museum is small, but is growing rapidly, and now contains a number of valuable and interesting articles. Donations are earnestly requested. All gifts will be labeled with the names of the donors.

Reading Room.

Connected with the Library is the students' reading-room, supplied with the leading magazines and daily papers, and most of the County papers of the State.

Literary Societies.

Three literary societies, the Calhoun, the Palmetto and the Columbian, furnish a valuable supplement to the work of the College. These societies afford facilities for practice in debate, oratory, declamation and essay-writing, and their members acquire valuable knowledge of parliamentary law and usage. The meetings are held weekly on Friday evenings. Public celebrations and contests are also held at intervals during the year, at which there are debates, orations and declamations by the students.

The societies occupy halls in the main College building, which are furnished with carpets and opera-chairs, and are maintained entirely by the students. A small fee is charged for initiation, and there are also monthly dues of a few cents to meet running expenses. The total membership usually comprises about nine-tenths of the registered attendance at the College. All students are advised to join one of these societies.

THE CLEMSON COLLEGE CHRONICLE, a magazine designed to encourage literary work among the students, is published monthly during the session by the literary societies.

Scientific Association.

The Clemson College Scientific Association was organized for the purpose of promoting knowledge of the progress of the natural sciences, theoretical and applied. Public meetings are held every two months, at which subjects of general scientific interest are discussed by members of the faculty and advanced students of the College. These meetings are largely attended by the students.

Lecture Course.

A lecture course, employing some of the best talent on the American platform, has been provided for the coming session. These lectures will be delivered in Memorial Hall, and will occur monthly while the course is in progress. The cost to students will be about \$1.00 for the course.

Cadet Exchange.

A Cadet Exchange is maintained, where students may purchase at wholesale prices necessary articles, such as books, stationery, collars, cuffs, underwear, etc.

Athletics.

It is the policy of the College to sanction and encourage manly athletics so long as studies and other duties are not interfered with. Class records show that, as a rule, students engaged in athletics do

as well in their classes as those who are not. Should future experience reverse these records athletic sports will be restricted or prohibited altogether.

The following resolution relative to athletics has been passed by the faculty: That it is the sense of the faculty that only cadets in good class standing be permitted to play in any intercollegiate game of tennis or of ball—either base or football—to appear in any public exhibition or on the rostrum; or to attend as Clemson's representatives any meeting of any sort at any time or place.

The most popular games this year are baseball and football. It is assumed that parents are willing for their sons to participate in these games unless the President is definitely notified to the contrary. The athletic teams will be permitted to take a few trips each season, usually on Saturdays, to play intercollegiate games. Students must file written permission from parents for these trips.

Rules of the South Carolina Inter-Collegiate Athletic Association.

The following rules are an abstract of the Constitution of the South Carolina Inter-Collegiate Athletic Association, to which the following colleges belong: South Carolina College, Wofford College, Newberry College, Clinton College, South Carolina Military Academy, and Clemson College:

ARTICLE VII. QUALIFICATIONS OF CONTESTANTS.

The following persons are debarred from playing with or against the colleges in this Association:

1. Any student who has ever received compensation for his athletic services, or is a professional by definition of the Constitution, unless such party was a regularly matriculated student of a college on December 27, 1900.

2. Any student who since that date has received compensation or is a professional.

3. Any student who receives any compensation whatever from the College he is attending for his athletic services.

4. Any student who enters College later than thirty days after the opening of the academic year.

5. Any student doing less than ten hours satisfactory class work, or any post-graduate student of more than two years' standing; or who is doing less than five hours satisfactory class work.

6. Any student playing under an assumed name.

7. Any student who, when called upon to sign a statement that he is in no way violating the Constitution of this Association, refuses to do so.

Distinguished Students.

Students who make an average of 90 per cent. or more on each and every study for the entire session are designated as *distinguished*. Following is a list of the students who have attained this distinction during the past three years.

SESSION 1898-99.

Senior Class: Thomson, J. C.

Sophomore Class: McLendon, W. E.

Freshman Class: Gunby, F. M.; Moore, J. F.; Shealy, E. M.

SESSION 1899-00.

Sophomore Class: Stewart, S. C.

Irregular: Welborn, H. G.

SESSION 1900-01.

Senior Class: Burgess, W. A.

Junior Class: Norris, F. K.

Medals.

PRESIDENT'S ESSAY MEDAL.—A gold medal is offered annually by the President for the best essay. The subject is announced early in the year and the competition is open to all students.

R. W. SIMPSON MEDAL.—A gold medal is awarded annually by Messrs. Oehm & Co. to the best drilled cadet in the Freshman, Sophomore and Junior classes. This medal was awarded in 1901 to Mr. W. M. Carter.

A **GOLD MEDAL** is also awarded annually to the captain of the best drilled company. Awarded in 1901 to Capt. J. C. Duckworth of Company A.

SOCIETY MEDALS.—The literary societies award medals for excellence in debate, oratory and declamation.

The Clemson Pictures.

Following is a list of the oil-paintings bequeathed by Thomas G. Clemson. This collection, with additional portraits, may be seen in the President's office in the Agricultural building:

1. Virgin and Child Rubens
2. Head of Velasquez
3. Landscape Poussin
4. Flower Piece Zegers
5. The Jesuit with Medallion Teniers
6. Fruit, etc. Deheem

7. Student's Repast Vansomer
8. Peasant Eating Soup Frans Hals
9. Adoration (on copper) Frans Hals
10. Boy Mending Pen Spanish
11. Head Study Greuze
12. Flowers Robert
13. Cattle Louis Robert
14. Goats and Sheep Louis Robert
15. Landscape Louis Robert
16. Magdalen Van Schendel
17. Landscape Fearnley
18. Gateway Tavernier
19. Titian Placing his Model
20. The Quarrel Venneman
21. Reconciliation Venneman
22. Two Old Men Venneman
23. Scene in Spain Bossnet
24. Marine View in Holland Francia
25. Poverty and Suffering DeBlock
26. Group of Lambs Louis Robert
27. Tasso in Prison Visited by Montaigne Copy after Gallait
28. Magdalen, Study after Murillo DeBlock
29. Girl of Antwerp with two Dogs Copy after Landseer
(Original in the gallery of King Leopold of Belgium.)
30. Landscape Copy of Koekkoek by Louis Robert
31. Waterfall Copy of Auerbach by L. Robert
32. Peasant Girl By an Antwerp Artist
33. Gate of the Alhambra Copy of Bossnet
34. Beatrice Cenci Very old copy; done before original had faded
35. Mother Teaching Son Copy
36. Landscape
37. Old Man Smoking Leys (Copy)



COURSES OF STUDY.

There are three full courses of study—Agricultural, Mechanical and Textile. All regular students in the Freshman class pursue the same studies. The Mechanical and Textile courses are also the same in the Sophomore year. Students pursuing the Mechanical course choose between electrical engineering and civil engineering in the Junior and Senior years.

Upon the completion of one of these courses the student is awarded a diploma conferring the degree of Bachelor of Science (B. S.)

Graduates of the Mechanical course, or of equivalent courses in other institutions, may complete the Textile course in one year.

AGRICULTURAL COURSE.

Freshman Class.

	Hours per week.			Hours per week.	
	1st	2d		1st	2d
	Term.	Term.		Term.	Term.
THEORETICAL.			PRACTICAL.		
Mathematics	5	5	Woodwork	3	3
English	4	4	Mechanical Drawing . .	3	3
Composition and Spelling	1	1	Freehand Drawing . . .	4	4
History	3	3	Forgework	3	3
Agriculture	2	2	Drill	2	2

Sophomore Class.

Mathematics	5	3	Chemical Laboratory . .	4	4
Surveying	0	2	Surveying Field Work . .	0	2
English	3	3	Stock Breeding	0	2
Chemistry	3	3	Agriculture	4	2
Stock Breeding	0	2	Entomology	3	0
Horticulture	2	0	Botany	0	3
Botany	0	2	Drill	2	2
Agriculture	2	0	Horticulture	2	0

Junior Class.

English	2	2	Chemical Laboratory . .	6	6
History	4	0	Agriculture	2	0
Chemistry	2	2	Horticulture	0	2
Military Science	1	1	Dairying	2	2
Dairying	2	2	Entomology	0	1
Botany	0	2	Botany	1	2
Horticulture	0	2	Veterinary Science . . .	2	0
Entomology	0	2	Drill	2	2
Veterinary Science	2	2			
Agriculture	2	0			

Senior Class.

English	2	2	Chemical Laboratory . .	6	6
History	2	2	Veterinary Science . . .	3	3
Chemistry	2	2	Mineralogy	2	0
Geology	3	3	Agriculture	0	2
Cattle Feeding	0	2	Bacteriology	2	0
Veterinary Science	3	1	Horticulture	0	2
Bacteriology	2	0	Drill	2	2
Entomology	0	2			
Military Science	1	1			

MECHANICAL COURSE.

Freshman Class.

	Hours per week.			Hours per week.	
	1st	2d		1st	2d
	Term.	Term.		Term.	Term.
THEORETICAL.			PRACTICAL.		
Mathematics	5	5	Woodwork	3	3
English	4	4	Mechanical Drawing . .	3	3
Composition and Spelling	1	1	Freehand Drawing.. .	4	4
History.. . . .	3	3	Forgework	3	3
Agriculture.. . . .	2	2	Drill	2	2

Sophomore Class.

Mathematics	5	5	Woodwork	3	3
English	3	3	Mechanical Drawing . .	3	2
Chemistry	3	*3	Foundry	3	3
Natural Philosophy . . .	2	2	Chemical Laboratory . .	4	2
History	2	2	Descriptive Geometry . .	0	3
			Drill	2	2

Junior Class.

Mathematics	5	5	Machine Shop	4	4
Physics	2	2	Mechanical Drawing . .	3	3
Electrical Eng. or Civil			Electrical Lab. or Civil		
Engineering	3	3	Engin'ring Field Work	3	3
Mechanics	2	2	Physical Laboratory . .	3	3
English	2	2	Drill	2	2
Military Science	1	1			

Senior Class.

Mechanical and Steam			Shopwork	4	4
Engineering	2	2	Machine or Bridge De-		
Electrical Engineering or			sign	3	3
Civil Engineering . . .	5	5	Electrical Laboratory or		
Applied Mechanics and			Civil Eng. Field Work	3	3
Hydraulics	3	3	Mechanical Laboratory..	3	3
History	2	2	Drill	2	2
English.. . . .	2	2	*Second Term—Chemistry, first		
Military Science	1	1	half; Surveying second half.		

TEXTILE COURSE.

Freshman Class.

	Hours per week.			Hours per week.	
	1st	2d		1st	2d
	Term.	Term.		Term.	Term.
THEORETICAL.			PRACTICAL.		
Mathematics	5	5	Woodwork	3	3
English	4	4	Mechanical Drawing . .	3	3
Composition and Spelling	1	1	Freehand Drawing . . .	4	4
History	3	3	Forgework	3	3
Agriculture	2	2	Drill	2	2

Sophomore Class.

Mathematics	5	5	Woodwork	3	3
English	3	3	Mechanical Drawing . .	3	2
Chemistry	3	3	Foundry	3	3
Natural Philosophy . . .	2	2	Chemical Laboratory . .	4	2
History	2	2	Descriptive Geometry . .	0	2
			Drill	2	2

Junior Class.

Mathematics	5	5	Machine Shop	4	4
Chemistry	2	2	Textile Industry	5	5
Textile Industry	3	5	Drill	2	2
English	2	2	Chemical Laboratory . .	4	4
Military Science	1	1			
Mechanics	2	0			

Senior Class.

Applied Mechanics and			Mechanical Drawing . .	2	2
Hydraulics	3	3	Textile Industry	11	11
Textile Industry	6	6	Drill	2	2
Mechanism	1	0	*Second Term—Chemistry, first		
Steam Engine	0	1	half; Surveying, second half.		
English	2	2			
Military Science	1	1			
History	2	2			

Subfreshman Class.

A Subfreshman course is provided for students not prepared to enter the Freshman class. In addition to instruction in the usual preparatory branches, agriculture, drawing and military drill are also included in this course. The work is closely articulated with the instruction in the advanced classes.

Special Courses.

Graduates of this and other institutions, or other mature young men of earnest purposes, who desire to pursue special lines of work will be given every opportunity that the College affords, upon satisfying the faculty that they are qualified to undertake such courses to advantage. Students thus admitted are expected to apply themselves assiduously, and with the approval of the faculty, may board outside of the barracks.

Irregular Courses.

Students are earnestly advised to pursue regular courses; but those who for satisfactory reasons are unable to do so, may, upon the approval of the faculty, pursue irregular courses. No student whose time is not fully occupied will be permitted to remain at the College. A student who is behind in any subject will not be permitted to change from a regular to an irregular course. An application for an irregular course must be accompanied by the written approval of parent or guardian, and of instructors in all subjects for which application is made. Diplomas are not issued to irregular students.



INSTRUCTION AND EQUIPMENT.

GENERAL AGRICULTURE.

PROFESSOR NEWMAN.

ASSISTANT PROFESSOR CONNER.

This study is pursued in all of the classes, commencing with the elementary principles in the Freshman year. During this year the instruction is confined to the application of principles and practice which do not require a knowledge of the sciences related to agriculture.

As the student progresses in the study of the natural sciences, the application of these sciences is taught in their relation to the art of agriculture, special stress being placed upon the protection, improvement, fertilization, and all manipulations of the soil in the preparation for planting and in the cultivation of crops.

The cultivation of each important crop is discussed in the concrete. Special attention is bestowed upon the grasses and their cultivation. In the higher classes the employment and management of labor, farm equipment, and farm management are discussed. All instruction is given by lectures, the subjects being illustrated as far as possible by practical exercises.

Reference-books: Voorhees' First Principles of Agriculture, Storer's Agriculture, Experiment Station Bulletins.

Equipment.

The College has a large storage barn provided with silos, a cow barn furnished with various forms of stanchions, a mule barn provided with the most improved forms of stalls and feed-racks, implement and wagon sheds for storage of tools, etc., compost building for making compost in large quantities, and two large cribs for storage of corn.

Among agricultural machinery and implements may be mentioned the following: Self-binder, corn-harvester, Deering ball-bearing mower, Osborne mower, self-dumping rake, check-row corn planter, Buckeye cultivator, B. F. Avery cultivator, Tower cultivator, disc-cultivator, spring-toothed harrow, smoothing harrows, various forms of pulverizers, manure-spreading machines, fertilizer and grain drill, various forms of small fertilizer drills, Planet Jr., drill, two Planet Jr. plows, scientific mill, stone grist mill, Tornado ensilage cutter, small thresher, hand-gin, rock-crusher, road machine, three terrace levels, and a 10 kw. electric motor.

HORTICULTURE.

MR. C. C. NEWMAN.

The course in horticulture consists of horticulture proper, home gardening, truck farming, pomology, viticulture, canning and experiment work.

Instruction is given by lectures, covering the subject of horticulture in its comprehensive sense. The instruction is continued through the entire course and is illustrated by practical exercises in the garden, the orchard, the vineyard and the greenhouse.

In the practical work, the student is required to labor, and is thereby taught by actual experience the use of tools, the proper mode of preparing, fertilizing and cultivating the soil; shipping, storing, and canning vegetables and fruits; training and pruning vines and trees; propagating plants by seeds, grafts, buds, layers, leaves, and divisions. Instruction is also given in the making and use of hot-beds, cold-frames, mulching, etc., together with the art of forcing, crossing, and hybridizing, and the care of plants in the greenhouse.

Equipment.

The Horticultural building, a two-story frame house, contains the classroom, offices and collections of the horticultural division, and the local office of the United States weather bureau.

The equipment for practical instruction in horticulture consists of the following: canning outfit complete; greenhouse, 21x140 feet, heated by hot water; experimental garden, about five acres; orchard, vineyard, and plats of small fruits, twenty acres, and a small nursery.

ENTOMOLOGY.

DR. ANDERSON.

The aim of instruction in this division is primarily to give the student a working knowledge of the science for practical purposes; secondarily, to lay the foundation for further study, should the student desire to continue the subject. Special attention is given throughout to species and groups of insects of economic importance—both noxious and beneficial, together with methods of combating the former intelligently.

Sophomore Class.

GENERAL COURSE.—*Structural, Morphological and Systematic Entomology*.—Lectures upon the characteristics of the orders, suborders and more important families, with field and laboratory work. Comstock's Manual for the Study of Insects is used as a guide.

Junior Class.

ECONOMIC ENTOMOLOGY.—A course in applied entomology, dealing with the more important insect pests of crops and the methods and means of combating them, including the theory and practice of spraying.

Senior Class.

ECONOMIC ENTOMOLOGY.—*Animal Parasites*.—Lectures upon the parasitic pests of the various farm animals.

Equipment.

A large, well-lighted room in the Agricultural building has been assigned to the division and is being properly equipped. Specimens illustrating the orders, suborders, and many of the important families are on hand, and the collection is constantly growing. Twelve simple and three compound microscopes are available for laboratory work, and others are to be added this year. Forests, fields, streams, orchards and greenhouses are convenient.

SPECIMENS WANTED.—A collection to represent the insect fauna of the State has been begun. Specimens of insects, larvæ, cocoons, etc., as well as notes upon any insects in the State, will always be thankfully received.

To send living specimens it is only necessary to inclose them in a tight box with a supply of food or food-plant and mail them to the Division of Entomology. A metal box is preferable. Dead specimens of larvæ or insects may be sent in cotton previously moistened with alcohol or formalin and inclosed in a tight metal box.

BOTANY.

MR. ROLFS.

Sophomore Class.

SECOND TERM.—During the second term of the Sophomore year the students of the Agricultural course receive instruction in general botany. During this term they become familiar with the general structure of plants—beginning with the simplest forms and studying to the complex. Incidentally they learn how to manipulate

the simple and the compound microscope. A large portion of the time is spent on flowering plants. As this term's work is the basis for the more advanced botanical studies in the course, considerable stress is laid upon the underlying principles of plant morphology and plant structure.

Junior Class.

FIRST TERM.—During this term lessons in plant physiology are given. Some of the simple and fundamental principles are studied. Experiments with water cultures and others of a similar nature are carried on by the students.

SECOND TERM.—During the second term the class takes up the study of plant diseases. Attention is directed especially to the diseases of economic plants. They are taken up from a systematic standpoint of the parasite. A careful microscopic study is made; its effect on the pest noted, and the remedy learned.

The practical work consists in microscopic study in the laboratory, exercises in studying the diseases in the field, and collecting specimens—each student collecting and naming correctly an herbarium of twenty-five species of parasitic fungi.

Senior Class.

FIRST TERM.—During the first term the class receives instruction in bacteriology. During this work the student becomes familiar with the different methods of sterilization and different culture media. Several species of bacteria are cultivated, mounted and studied in detail. The class is also required to isolate and study a bacterium from a mixture of species. It is the object of the course to acquaint the students with the fundamental principles of bacteriology.

Equipment.

The botanical laboratory is located on the third floor of Agricultural Hall. The northern exposure makes it especially suitable for microscopic work.

In the laboratory equipment there are the following pieces of apparatus: twenty-five simple microscopes, twenty-two compound microscopes (six of these are bacteriological microscopes), incubator, glass dishes, sterilizer, embedding bath, students' microtome, section cutters, etc.

A creditable beginning has been made in collecting an herbarium. This collection includes plants collected in the State, plants received by exchange, and a donation of about twenty-five hundred mounted specimens from Dr. A. P. Anderson. This donation includes plants collected in Minnesota and in Europe, including many species not present in the flora of South Carolina.

DAIRYING.

ASSISTANT PROFESSOR CONNER.

Junior Class.

Students who take the agricultural course receive instruction in dairying. In the dairy building, which is equipped with apparatus for testing milk, separating, butter-making, cheese-making, etc., practical instruction is given and opportunity afforded students of learning the various operations carried on in a well-conducted private dairy, creamery or cheese factory. Wing's "Milk and its Products" is used as a text-book.

Those wishing to take a short practical course in dairying may enter Nov. 15 and continue ten weeks, during which time instruction will be given in butter making, care and use of the separator, milk testing and feeding and care of stock. This course is designed to meet the wants of those desiring a working knowledge of dairying. Students taking a short, special course will be required to board out of barracks. Board will cost about \$10 per month.

Equipment.

The commodious dairy building has an independent steam plant and water-works, and is supplied with everything needed for making butter and cheese on a factory and private dairy scale, including the leading makes of cream-separators, churns, butter-workers, milk-testers. Students are thoroughly drilled in the use of this apparatus.

ANIMAL HUSBANDRY.

ASSISTANT PROFESSOR CONNER.

Sophomore Class.

STOCK BREEDING.—A careful study of the different types of domestic animals is pursued, and the student is thoroughly drilled in the principles and methods of successful breeding, heredity, atavism, variation, selection, fecundity, influence of environment, in-breeding, cross-breeding, grading, influence of previous impregnation.

The different breeds of horses, cattle, sheep and swine are considered, and those best adapted to the South are discussed at length.

The College farm has a number of breeds of domestic animals which serve to illustrate the subject.

As a supplement to this work, the student is drilled in the use of the score-card, which fixes the different types and breeds firmly in his mind.

Senior Class-

STOCK FEEDING.—This course includes the following subjects: Laws of animal nutrition; composition of the animal body; fodders as a source of nutrients; digestion, resorption, circulation, respiration, and excretion; formation of muscle, flesh and fat; composition and digestibility of feeding stuffs, and their preparation and use; feeding for fat, for milk, for wool, for work and for growth.

The available feed-stuffs of the South are discussed at length. Henry's "Feeds and Feeding" is used as a text-book.

VETERINARY SCIENCE.

DR. NESOM.

The object of this course is to acquaint the agricultural student with the elementary principles of veterinary medicine and surgery. The time is too short to make professional veterinarians of those who take this study, but is sufficient to make them more intelligent stockmen when graduated. The entire time devoted to the several veterinary studies is equivalent to four hours lectures and three hours practical work a week for one year, and is given as follows:

Junior Class.

FIRST TERM.—Lectures on anatomy and physiology of the domesticated animals.

SECOND TERM.—Lectures on histology, pathology and materia medica.

Senior Class.

BOTH TERMS.—During the entire Senior year lectures on the principles and practice of veterinary medicine are given once a week. Only the more common diseases of farm animals can be considered during the limited time devoted to this study, but special attention is given to those diseases that occur in epizootic outbreaks. Among these may be mentioned glanders, anthrax, Texas fever, tuberculosis, cholera, sheep "scab," hydrophobia, and favus. Careful considera-

tion is given to the bacteriological and parasitic agencies causing the diseases.

LABORATORY.—A limited amount of laboratory work is given during the lectures to illustrate the structure of normal and pathologic tissues and the simpler reactions in chemical physiology. In pharmacy each student is required to compound a limited number of prescriptions.

CLINIC AND DISSECTION.—Every Monday afternoon a free clinic is held at the veterinary hospital. This is liberally patronized by the stockmen of the surrounding country, and affords the students ample practical work in surgical operations and the treatment of animal diseases. Advantage is taken of accidental material for post-mortem examination and gross dissection.

POST-GRADUATE AND SPECIAL WORK.—Graduates of this and other Colleges and young men found proficient in the elementary branches of science and literature may receive special instruction. This work is designed as a preparatory course to entrance into a regular veterinary college. The special needs of each student are considered, and the work is planned to meet his individual case. The course taken here will shorten the time necessary for graduation from the leading veterinary colleges, whether the student desires to become a veterinary practitioner, government meat-inspector, or army veterinarian.

Equipment.

The veterinary class-room and laboratory is about 30x50 feet, provided with steam heat, electric lights, water, gas, and the necessary furniture. It is amply supplied with chemicals and the best imported apparatus for technical work.

The veterinary hospital is a structure of modern design, containing apartments for office, drugs, dissecting and horse-shoeing, besides stalls, feed-bins, water supply and electric lights. One of the best revolving operating tables has been provided. The surgical instruments and appliances now on hand, with a few additions, would do credit to a regular veterinary college. A complete outfit for horse-shoeing is provided. A good stock of drugs and chemicals is kept on hand and prescriptions are filled upon request.

It is hoped that in the near future the facilities may be so extended as to include practical work in caring for animals undergoing treatment in hospital, horse-shoeing, and the inspection of meat-producing animals designed for slaughter.

CHEMISTRY.

PROFESSOR HARDIN.

ASSISTANT PROFESSOR BRACKETT.

MR. SHIVER.

MR. HENRY.

Sophomore Class.

BOTH TERMS.—*General Chemistry*.—Inorganic chemistry and the leading facts and principles of organic chemistry. Text-book, Roscoe's Elementary Chemistry. *Laboratory*—Introductory work and qualitative analysis. Text-book, Jones' Junior Course in Practical Chemistry.

Junior Class.

BOTH TERMS.—*Industrial and Analytical Chemistry*.—The applications of chemistry in the more important arts and manufactures. Among the subjects studied are: Sulphuric acid; soda; chlorine; potash salts; fertilizers; lime, mortar and cements; glass; porcelain; illuminating gas; coal tar; mineral oils; vegetable and animal oils; soap; fermentation industries, etc. Text-book, Thorp's Outlines of Industrial Chemistry. *Laboratory*—Qualitative and quantitative analysis and assaying. Books used: Jones' Junior Course in Practical Chemistry, Fresenius' Qualitative and Quantitative Analysis.

Senior Class.

BOTH TERMS.—*Agricultural and Analytical Chemistry*.—The composition of plants, the sources of plant-food, the composition of soils, the improvement of soils by chemical means, the composition and manufacture of fertilizers, the composition of feeding-stuffs and of dairy products. Text-book, Johnston's Elements of Agricultural Chemistry, edited by Cameron and Aikman. *Laboratory*—Quantitative analysis of fertilizers, soils, ashes of plants, water, cattle-foods and dairy products. Books used: Bulletins of U. S. Department of Agriculture, containing methods of analysis adopted by the Association of Official Agricultural Chemists.

Equipment.

THE CHEMICAL LABORATORY is a two-story brick building, 50x80 feet, covered with slate, and finished inside with Southern pine.

On the first floor there are eight rooms. Five of these are appropriated for State Analytical and Experiment Station work, and supplied with all the

necessary chemical and optical apparatus. Of the other rooms on this floor, one is a balance room for students, one an office, and the third is fitted up as a laboratory for advanced students. The basement is used for assaying and storage.

On the second floor there are five rooms. The qualitative laboratory, which is the largest of these, is 36x48 feet, with a pitch of seventeen feet in the clear. It will accommodate sixty students at a time, and is provided with hoods for carrying off noxious gases, convenient working tables, water, gas, and all necessary appliances for experimental work. The other rooms on this floor are the lecture-room, professor's laboratory, an office, and a balance room.

The chemical library is supplied with standard works of reference on theoretical, analytical and applied chemistry, as well as with a number of American and foreign journals.

To meet the needs of the department an addition to the present laboratory has been erected and is now nearing completion. It is hoped that the new building will be equipped and ready for use at the beginning of next session.

GEOLOGY AND MINERALOGY.

PROFESSOR LEWIS.

Senior Class.

FIRST TERM.—*Mineralogy*.—Elements of crystallography; laboratory study of crystal forms by the use of models and natural crystals; construction of simple crystal drawings; chemical and physical properties of minerals; chemical and physical tests of known minerals; determination of unknown specimens. Special attention is given to the useful minerals and those forming the chief constituents of rocks.

BOTH TERMS.—*General Geology*.—Dynamical, structural and historical geology, with special reference to the development of the North American continent. The influences of geologic phenomena on man are carefully pointed out, particularly in the consideration of soils, the agents of erosion, transportation and deposit, and resultant topographic forms.

SECOND TERM.—*Economic Geology*.—The course in General Geology is completed a few weeks before the close of the second term, a supplementary course of about twenty lectures in Economic Geology occupying the remainder of the time. These treat of the origin and general characters of ore-deposits, with special reference to the ores of the more useful metals; iron, copper, lead, silver, gold, etc.; also

a brief discussion of the origin and distribution of the principal non-metallic minerals: coal, petroleum, natural gas, mineral fertilizers, building stones, salts, clays, etc. The course deals especially with economic deposits of the United States.

Equipment.

The teaching collections contain over 1,000 labeled specimens of typical rocks, minerals and fossils, besides abundant material for laboratory study. The collections are arranged in systematic order in glass cases, and are always available to students. The class-room is also furnished with large physical wall maps of the world and of all the continents, an 18-inch terrestrial globe, an 18-inch relief globe (Jones' "New Model of the Earth"), a set of geological and geographical relief models, and a large collection of lantern slides.

For practical work in mineralogy the laboratory is supplied with water and gas and the necessary apparatus and reagents for the determination of minerals by means of their physical and chemical properties. There is also a chemical balance and a petrographic microscope, with photomicrographic camera and all important accessories.

Standard works on geology and mineralogy are kept in the laboratory for reference. The College is a stated repository for all publications of the United States Geological Survey, and many valuable maps and reports have been received from this source, including all geologic folios that have been issued and a select series of topographic maps for instruction in physiography. A number of valuable maps have also been supplied by the United States Coast and Geodetic Survey.

APPLIED MECHANICS AND MECHANICAL ENGINEERING.

ASSISTANT PROFESSOR BARNES.

In these courses the student is taught the applications of his scientific, mathematical and technical knowledge to the design and construction of engineering structures, and of machinery and manufacturing plants in general. In previous shop practice the student has acquired some knowledge of the character of engineering materials and a certain necessary familiarity with shop methods. He is, therefore, prepared to study the strength of these materials, their behavior under the various stresses to which they may be subjected, and the methods of proportioning the material in a given machine or structure so as best to withstand these stresses. The principles of mechanism are also taught and a brief course of lectures is given on engineering specifications and the law of contracts. Instruction is given mainly by lectures, supplemented by laboratory practice and by the solution of a wide range of practical problems.

Junior Class.

FIRST TERM.—*Elementary Mechanics*.—Motion, force, velocity, work, energy, power, stress, strain, elasticity, resilience, moments of force, centre of gravity, moment of inertia, momentum, hydrostatics. *Text-book*—Wood's Elementary Mechanics.

SECOND TERM.—*Mechanism*.—Spur, bevel, and screw gearing, belt gearing, lobed and elliptic wheels, epicyclic trains, escapements, ratchet motions, link motions, quick return motions, cam motions. *Text-book*—Stahl and Wood's Mechanism.

Senior Class.

BOTH TERMS.—*Applied Mechanics*.—Theory of the resistance and elasticity of engineering materials; tension, compression, shearing and combined stresses; flexure of beams and columns; torsion of shafts; statics of framed structures and of flexible cords; graphical statics; theory of the arch; hydraulics. *Text-book*—Church's Mechanics of Engineering.

BOTH TERMS.—*Mechanical Engineering*.—Lectures on the design and construction of steam boilers, heaters, pumps and injectors; theory and design of simple, compound and triple expansion steam engines, gas and gasoline engines, hot air engines, air compressors and motors, ice and refrigerating machinery, heating and ventilating systems, transmission of power; engineering specifications and the law of contracts.

BOTH TERMS.—*Mechanical Engineering—Laboratory Practice*.—Study, use and calibration of water-meters, weirs, steam gauges, indicators, dynamometers, calorimeters; efficiency tests of screw-jacks and hoists; tests of fuels and lubricants; tests of building materials, as iron, wood, brick, cement, etc.; erecting, lining up and setting the valves of plain slide-valve and automatic cut-off steam engines; indicator practice; horse-power and efficiency of steam, gasoline and hot-air engines and air-compressors and motors; efficiency trials of steam boilers; duty trial of steam pump and of College pumping engine. *Reference books*: Carpenter's Experimental Engineering, Smart's Engineering Laboratory Practice, Thurston's Steam Engine.

Equipment.

This laboratory occupies a room 41x45 feet, and contains the following equipment: For steam engineering: 15-horse power horizontal, locomotive type boiler; 6-horse power vertical boiler; Erie 6-horse power plain slide-valve steam engine; 6-horse power vertical steam engine built in the shops; Corliss cross-compound condensing steam engine arranged so that either side may be run condensing or non-condensing and each side independent of the other; Wheeler surface condenser with combined air and circulating pumps;

set of steam-gauge testing apparatus; Carpenter's separating steam calorimeter; two throttling steam calorimeters; five steam engine indicators of various makes; two standard injectors. For hydraulic engineering: two hydraulic rams; Pelton water motor; power triplex pump; three duplex pumps of different makes; three weirs; recording altitude gauge; 6 pressure and altitude gauges. For compressed air: Clayton air compressor with jacketed cylinders; improved air motor. For fuel and lubricants: Carpenter's fuel calorimeter with scales, balances, and oxygen generating devices; standard viscometer. For testing building materials: 100,000-pound Olsen automatic vertical testing machine driven by 5-horse power Westinghouse electric motor, and fitted for tension, compression, and transverse testing; Fairbank's cement testing machine; 3,000-pound transverse testing machine. The laboratory also contains a 5-horse power Otto gasoline engine, an Ericsson hot-air engine, a 6-horse power transmission dynamometer, graduated to read horse power direct and built by students, and an assortment of standard thermometers, weights and measures. The apparatus is so arranged that any of it may be used for separate or combined tests, or for any original investigations. Besides the equipment in this room, the electric light and power plant, the heating plant of the College and barracks, the isolated plants at the dairy, horticultural grounds and pumping station are available for instructional purposes.

ELECTRICAL ENGINEERING.

PROFESSOR RIGGS.

ASSISTANT PROFESSOR KYSER.

Junior Year

Three hours per week for the whole session are devoted to the study of electricity and magnetism, and the elementary design of electro-magnetic mechanism. The work of this session is largely in laying a foundation for the more strictly engineering work of the Senior year.

Text-books.—Thompson's Elementary Lessons in Electricity and Magnetism, Slingo and Brooker's Electrical Engineering.

LABORATORY WORK.—Three hours per week for the session are devoted to experimentally verifying fundamental electrical laws, measurements of current, electro-motive force, resistance, quantity, induction, capacity, permeability, calibration of instruments, etc., etc.

Reference-books.—Ayrton's Practical Electricity, Stewart and Gee's Practical Physics, Nichols' Physics, Vol. I., Gray's Absolute Measurements, Ewing's Magnetic Induction, Henderson's Practical Electricity and Magnetism, Vols. I. and II.

Senior Year.

Five hours per week are given to the study and design of dynamo electric machinery. Special attention is given in the second half session to the study of alternating currents, and their applications to light and power. The course is supplemented by lectures and problems on synchronous and induction motors; design of transformers, transmission lines and plants; multiphase wiring, etc.

A dynamo design, with complete set of drawings, is required of each student.

Text-books.—Thompson's Dynamo Electric Machinery, Jackson's Alternating Currents, Vol. II., Alternating Currents by Franklin & Williamson.

Reference-books.—Weiner's Dynamo Electric Machines, Bell's Electric Power Transmission.

LABORATORY WORK.—Three hours per week for the session is devoted to the care, management and testing of arc, incandescent, and alternating current generators; direct current, synchronous and induction motors; arc lamps; transformers; calibration of station instruments, and incandescent lamp photometry. Practical work in house wiring, installation of meters, building and winding electrical apparatus and machines is also given.

Equipment.

ELECTRICAL INSTRUMENT LABORATORY.—This is a separate brick building, designed especially for delicate electro-magnetic work—no iron, steel or other magnetic substances having been used in its permanent construction. It contains, in addition to all necessary elementary apparatus, the following instruments of precision: Kelvin-Deka ampere balance, Kelvin four-coil astatic galvanometer, four D'Arsonval dead-beat galvanometers, large ring tangent galvanometer, three Elliott Brothers' standard resistance sets, Elliott Brothers' standard tangent galvanometer, Queen's standard ballastic galvanometer, Nalder Brothers' sensitive galvanometer, Rowland-D'Arsonval ballistic galvanometer, Willyoung standard condenser, Becker's chemical balance, Carhart-Clark standard cell, thermometers, Wheatstone bridges, etc.

DYNAMO LABORATORY.—To meet the demands of larger attendance and increased equipment, a new building has been provided in which is installed the dynamo-electric machinery. This building also contains a class room and a dark room for extensive photometric work. It is a single story brick structure, 37x80 feet, with basement for supply rooms.

The first story is divided into a class room 25x35 feet, and a dynamo laboratory room 53x35 feet. The building is heated by steam and lighted by enclosed arc and incandescent lamps.

The lecture room has elevated seats and is equipped with a complete line of illustration models, apparatus and electrical instruments. It contains an electro magnet capable of supporting the weight of two tons.

The dynamo room contains, in addition to rheostats, speed counters, spring balances, etc., the following instruments and machines: set of Weston portable direct current instruments, set of General Electric portable alternating current instruments; Weston standard laboratory volt-meter and watt-meter; Queen watt-meter; Thompson's recording watt-meter; Ayrton's Cardew; Kelvin electrostatic volt-meters; Schaeffer & Budenberg tachometer; Westinghouse station volt-meter; two 3,000 watt transformers and one 600 watt transformer; General Electric 7 kw. rotary multiphase converter and 3-horse power induction motor; 5 kw. 3 phase rotary converter, and 1-2 horse power 3 phase induction motor (both built by students); Thomson-Houston & Brush arc generators; 20 kw. direct current generator; one 10 horse power and two 3 horse power direct current motors; two 2 1-2 kw. revolving field alternators (in process of construction here); 15 horse power Payne automatic engine; leading types of open and enclosed arc lamps; leading types of lighting arresters.

The dark room contains a complete outfit for high potential, high frequency and X-ray work, and a Deshler-McAllister central station type photometer, with rotating stand for incandescent lamp testing.

COLLEGE POWER AND LIGHT PLANT.—The machinery in the dynamo laboratory is driven by the 15 horse power Payne engine and a 20 horse power motor. Steam and electric power is furnished by the power plant situated in a neighboring building. This plant consists of an 85 horse power Corliss engine, driving an 18 kw. Lundell generator, a 30 kw. Weston generator and a 30 kw. General Electric Company's multipolar generator. This station furnishes power to 15 motors, ranging from 3 to 30 horse power. These motors are used at different points on the College property for a variety of purposes, such as pumping water, driving agricultural machinery, supplying power for machine shop, wood shop, textile department, etc. Several of these are at a considerable distance from the power station, thus furnishing examples of electrical transmission of power. Three of these, 7 horse power each, were built by students. In addition to power for driving motors, the same generators furnish electricity for lighting the barracks and other College buildings. Students have access to this plant, and are thus enabled to see the practical workings of a combined electric light and power plant, and to test its efficiency.

The aim of the course is to make practical as well as theoretical electrical engineers.

REQUIREMENTS.—Students desiring to take a special course in electrical engineering should remember that no one can hope to become an electrical engineer who has not the necessary foundations in mechanical engineering, to which electrical engineering is the superstructure. Two-thirds of an electrical engineer's training must be mechanical. No special classes will be formed, and students desiring to enter the Junior class will be expected to be prepared on elementary mechanical drawing, physics and chemistry, and on mathematics, through plane trigonometry. They will be expected to take with the Junior class, in addition to their electrical studies, physics, mechanics, mechanical drawing and machine shop work. Without these additional

branches the student will not be prepared for the more strictly engineering work of the Senior year.

To enter the Senior class, a student must be proficient in the work of the Junior year, in which physics and calculus are completed.

In addition to the electrical subjects prescribed for the Senior year, he must take—unless he is proficient along these lines—mechanics, mechanical engineering and laboratory, machine shop, drawing, and machine design.

Students who are not prepared, or are not willing to take the other subjects necessary to successful study of electrical engineering, will not be permitted to take a special course.

PHYSICS.

MR. POATS.

The course in Physics is intended to extend over the Sophomore and Junior years for students in Civil, Mechanical and Electrical Engineering. Students in the Textile Department take Physics during their Sophomore year only.

The instruction is by lectures and recitations, especial stress being laid upon those principles and facts which are fundamental to the several engineering professions. The lectures and recitations are illustrated by numerous experiments before the class.

In the Physical Laboratory the student is taught to perform for himself all the experiments of a general laboratory course. The Properties of Matter, the Laws of Mechanics, Heat, Electricity, Magnetism, Light and Sound are investigated. Students are required to make accurate and neatly written reports of all experiments.

Sophomore Class.

FIRST TERM.—Properties of Matter, Physical Measurements, Mechanics and Heat.

SECOND TERM.—Electricity and Magnetism.

Text-books.—Gage's Physics.

Junior Class.

BOTH TERMS.—Sound and Light.

Text-books.—Gage's Physics, supplemented with notes and lectures.

LABORATORY WORK.—*First Term:* Experimental determination of the physical properties of matter and the verification of Laws of Mechanics, Electricity and Magnetism. *Second Term:* Experiments with Heat, Sound and Light.

Reference Books.—Chute's Practical Physics, Ames' Manual of Experiments in Physics, Carhart & Patterson's Electrical Measurements and others.

Equipment.

The Physical Lecture Room and Laboratory is situated in the main College building, is 33x60 feet, and is well equipped for both the lecture and experimental work of a general course in physics.

DRAWING.

MR. LEE.
MR. KLUGH.

Freshman Class.

FREE-HAND DRAWING.—Graded exercises in sketching from plaster casts and other objects in pencil, charcoal and ink.

MECHANICAL DRAWING.—Exercises in the use of drawing instruments; working drawings of simple parts of machines from objects; geometrical problems with circles and straight lines; lettering.

Sophomore Class.

MECHANICAL DRAWING.—Working drawings of machines or parts of machines from sketches and specifications.

DESCRIPTIVE GEOMETRY.—Problems with lines and planes; simple solids in simple positions; intersection and development of surfaces; shades and shadows; axonometric projection and perspective.

Junior Class.

MECHANICAL DRAWING.—Working drawings of machines from sketches and specifications; drawings of the steam engine; dynamo electric machines; plans and details of bridges and buildings.

Senior Class.

MECHANICAL DRAWING.—Working drawings of machines from sketches and specifications. Work is assigned with reference to the course of study the student is pursuing. Drawings required in graduation theses.

Equipment.

The drawing rooms occupy the entire third floor of the Mechanical building, 51x69 feet. The third and fourth floors of the tower are also used as

dark room and blue-print room, respectively. The free-hand and mechanical drawing rooms are equipped to accommodate 35 students each, with cases, boards, T-squares, etc., for over 200. Students in the Freshman class are allowed the use of necessary instruments and apparatus free of charge. Members of the Sophomore, Junior and Senior classes are required to furnish their own drawing instruments.

WOODWORK.

MR. HOOK.

The course in wood-work does not aim to make the student a skilled carpenter, but rather to teach the proper use of tools, and impress the importance of working to exact dimensions. At the same time, it gives a certain amount of manual dexterity, useful in every vocation.

The course covers two years, beginning with the most elementary principles and advancing gradually by a series of graded exercises to the more complicated constructions where special methods and tools are required. All work is done from working drawings, and the methods of commercial shop management are constantly employed.

Freshman Class.

BOTH TERMS.—Names and uses of tools; graded exercises in carpentry, joining and wood-turning; construction of articles from working drawings; use of turning lathe and other simple machinery; construction of boxes, desks, etc., involving dove-tailing, glueing, polishing; turning of cups, vases, Indian clubs and other wooden articles.

Sophomore Class.

BOTH TERMS.—Use of wood-working machinery, as planer, jointer, circular and jig saw. Pattern work, with graded exercises, showing use of and reason for draft, halving, core prints and core boxes. Patterns for machines under construction. Advanced cabinet work and furniture construction—making of chairs, desks, bookcases, hall stands, and mantels.

Equipment.

The wood shop occupies the two-story wing on the east side of the Mechanical Engineering building, 45x100 feet. The lower floor contains the Freshman class room, equipped with fifteen work benches and sets of tools, six turning lathes, with tools for each, and other tools for hand work. On

this floor is also the planing mill machinery, consisting of a double roll planer, power rip and cut-off saws, band saw, scroll saw, 16-inch jointer, moulding machine, mortising machine, tenoning machine, emery grinder, lathe with 12-foot bed, etc.

The upper floor is devoted to the work for the Sophomore class, and is fitted up with fifteen work benches and sets of tools, six 10-inch turning lathes, one large pattern lathe, one combination saw and boring machine, one double-headed shaper, with a full set of cutters, one power carving machine, jig saw, one Universal trimming machine, special door and sash clamps, steam glue pots, mitre cutters, etc.

The power is supplied by electric motors conveniently located in the various rooms. A large lumber yard and dry-kiln serve to season and provide dry timber at all times.

MACHINE SHOP.

MR. WRIGHT.

Junior Class.

BOTH TERMS.—Instruction begins at the bench with exercises in chipping, filing, scraping and polishing. Castings and drawings are given the student, and he is required to chip, file, scrape and polish each casting into the exact form and size represented by the corresponding drawing. From bench work the student is advanced to machine work, where he is taught turning, boring, polishing, drilling, threading, planing, milling, grinding, etc., in iron, brass and steel. In all cases the exercises are required to be worked to drawings. The graded course of exercises is designed to teach the fundamental principles and practices of machine metal-work from the simplest to the most difficult operations. After completing this course of exercises, work is begun in the construction of tools, apparatus, etc.

Senior Class.

BOTH TERMS.—The Senior year is devoted to more advanced work in the construction of engines, dynamos, motors and other machines. The student is encouraged to work from his own designs as far as possible, but is guided and directed by the instructor in charge.

Equipment.

The machine shop is located in the southwest wing of the Mechanical building, which wing is 45x100 feet, well lighted, heated and ventilated.

It contains eighteen benches, with vises and kits of tools for each bench, and the following machine tools: 1 18-in.x12-foot engine lathe; 1 18-in.x8 foot engine lathe; 3 14-in.x6-foot engine lathes; 4 14-in.x6-foot Lodge & Shipley

lathes; 1 10-in.x4-foot F. E. Reed pattern maker's lathe; 1 15-in.x8-foot speed lathe; 1 18-in. drill press; 1 28-in. back geared drill press; 1 22-in.x22-in.x6-foot Powell planer; 1 Cincinnati cutter and tool grinder; 1 15-in. Gould and Eberhardt crank shaper; 1 dry emery grinder; 1 12-in. power hack saw; 1 36-in. grindstone; 1 22-in. Leland and Faulconer wet emery tool grinder; 1 American twist drill grinder; 2 14-in.x6-foot F. E. Reed compound rest engine lathes; 2 14-in.x6-foot Hendey compound rest engine lathes; 1 10-in. slotting machine, built by New Haven Mfg. Co.; 1 fan; 1 forge; 110 cases small tools. The tool room in connection with the shop contains all tools, etc., necessary for use with the machines.

The 6 kw. motor which drives the machinery was built by students.

FORGE AND FOUNDRY.

MR. JOHNSON.

MR. EARLE.

Freshman Class.

BOTH TERMS.—*Forge Work*.—The course in forging begins with instruction in the names of tools and building and managing fires. Graduated exercises are then taken up, including drawing out, upsetting, bending, punching, twisting, welding of iron, welding of steel, welding of steel and iron, annealing, hardening, tempering, case-hardening, blueing and browning. Some work is then done in ornamental forging. The practical instruction is supplemented, during the progress of the course, by lectures and notes on the principles involved, and the details of the best forge practice are thoroughly explained.

Sophomore Class.

BOTH TERMS.—*Foundry Work*.—Students are taught the names and uses of tools; tempering of molding sand; molding and patching of molds. Patterns of various shapes and sizes are used to illustrate the different principles of molding, venting and gating; the use of risers, pressure gates, skim gates, gaggers, chaplets, facing sands; feeding of castings; core-making; grading and mixing of iron; charging and managing the cupola. Four weeks are devoted to work in the brass foundry. The practical instruction is supplemented by a course of lectures.

Equipment.

FORGE SHOP.—This is a room 37x60 feet, situated in a wing of the Mechanical building. It is equipped with 18 Buffalo down draft forges and steel-faced anvils, with sets of hammers, tongs, swages, fullers, flatters, etc.

Continuous blast is furnished by a Buffalo blower driven by an electric motor, the down draft being produced by a 60-inch Buffalo exhaust fan. The shop is also supplied with vises, swage blocks, emery wheel, bending cone, etc.

FOUNDRY.—This building has recently been enlarged to meet the growing demands of the College, and now occupies a space 43x76 feet. It is equipped with a 26-inch Victor Collian cupola, a Millett's improved core oven, a two-ton post crane, 8 improved moulder's benches, an 18-inch brass furnace, with its usual complement of crucibles, tongs, etc., full sets of moulder's tools for the accommodation of 20 students, besides the usual accessories to a foundry, such as ladles, flasks, etc.

MATHEMATICS.

PROFESSOR BRODIE.

*ASSISTANT PROFESSOR WALLER.

ASSISTANT PROFESSOR MARTIN.

ASSISTANT PROFESSOR REAVES.

This course presupposes a thorough knowledge of arithmetic and of algebra through quadratics.

Freshman Class.

FIRST TERM.—*Algebra*. Quadratics (reviewed); simple indeterminate equations; inequalities; theory of exponents; logarithms; proportion and variation; series, binomial theorem; continued fractions; theory of limits; undetermined co-efficients; exponential theorem; equations in general.

Text-book.—Wentworth's Complete Algebra.

SECOND TERM.—*Plane Geometry*. Rectilinear Figures; circles; similar figures; comparison and measurement of surfaces of polygons; regular polygons and circles. Special attention is given to the formation, on the part of students, of the habit of clear and accurate reasoning and concise expression.

Text-book: Wentworth's Geometry.

Sophomore Class.

FIRST TERM.—*Trigonometry*. Measurements of angles; trigonometric functions; right triangle; goniometry; relations between functions of one angle; functions of multiple angles; inverse functions; trigonometric equations; oblique triangles; De Moivre's theorem; spherical trigonometry; general formulas; right spherical triangle; oblique spherical triangle; applications.

*Absent on leave for one year during which time his place will be filled by Mr. F. T. Dargan.

Text-book.—Wentworth's Trigonometry.

SECOND TERM.—*Higher Algebra* completed. *Solid Geometry*. Planes and solid angles; polyhedrons; cylinders and cones; spheres, spherical polygons and pyramids; volume.

Text-books.—Wentworth's Higher Algebra and Wentworth's Geometry.

Plane Surveying.—All regular students take plane surveying on completing trigonometry in the Sophomore year. This course includes the general principles and fundamental operations of surveying with compass, level and transit. The object of the instruction is to make practical surveyors, familiar both with the mathematical principles involved and the art of combining the theory and the practice. The field work includes actual surveys of extensive tracts of land, of which the areas are computed and plats are drawn. Experience is given in retracing the lines of old surveys, in numerous problems of laying out and dividing up land, and in locating irregular boundaries. Practice is also had in section leveling, laying out terraces, ditches, etc. Ample training is here furnished for the needs of agricultural students, and a good preparation is given for the higher work of the engineering courses.

Text and Reference Books: Davies-Van Amringe's Surveying; Gillespie's Surveying.

For agricultural students, the mathematical course ends with the Sophomore year.

Junior Class.

FIRST TERM.—*Analytic Geometry*. Cartesian and polar systems of coordinates; discussion and construction of loci; the straight line; transformation of coordinates; circle; parabola; ellipse; hyperbola; general equation of second degree involving two variables; higher plane curves; solid analytic geometry; systems of coordinates; equation of the plane; the straight line in space; transformation of coordinates; surfaces of the second order.

Text-book: Nichols' Analytic Geometry.

SECOND TERM.—*Differential Calculus*. Differentiation of algebraic functions; transcendental functions; successive differentiation and development of functions; functions of two variables; tangents and asymptotes; maxima and minima; radius of curvature; evolutes and involutes; envelopes.

Integral Calculus.—Elementary forms of integration; rational fractions; integration of irrational fractions; successive reduction; integration of functions of two variables; lengths of curves; areas of plane curves; rectification of curves; cubature of volumes.

Text-book: Taylor's Differential and Integral Calculus.

CIVIL ENGINEERING.

(Included in the Department of Mathematics.)

To begin the work in Civil Engineering the student must have completed the mathematical course through trigonometry and plane surveying. For the Senior course he must have a working knowledge of analytical geometry and calculus.

Junior Class.

BOTH TERMS.—Use and adjustment of transit, stadia, solar compass, and plane-table; topographic surveying with transit and stadia; railroad topography; triangulation; geodesy; city and hydrographic surveying; map and plan drawing, topographical symbols, etc.

Highway Engineering.—Location, construction and maintenance of the country roads and city streets; advantages of various materials for road covering; effects of grades and surface upon the cost of transportation; plans and specifications; practical problems in change of grade and relocation, from surveys of existing roads.

Theory of Railway Construction.—Preliminary and location surveys; location from contour map; laying out of simple and compound curves; setting of slope stakes; computation of earthwork; switches; turnouts; theory of economic location; effects of grades, curves and length upon the cost of operation.

Text and Reference Books: Johnson's Higher Surveying; Gillespie's Roads and Railroads; Burne's Highway Construction; Carhart's Field Engineering; Wellington's Economic Location.

Senior Class.

BOTH TERMS.—*Railway Engineering.*—Surveys are made for a line of railway a mile or more in length; the necessary plans, profiles and cross-sections are prepared; grades are determined, curves laid out, slope stakes set, and all the needed measurements made to enable the student to compute the excavations and embankments, and to estimate the cost of construction.

Surveys of Water Powers.—Discharge of stream, head and available power; form and dimensions of pond or reservoir; detailed topography of site for dam and determination of its form and dimensions for stability.

Geodesy.—Method of least squares; precise triangulation; base lines; precise leveling; azimuth by solar transit, by polaris and by altitude of the sun; measurement of meridian arcs; the earth as a spheroid; the earth as an ellipsoid; history of geodesy.

Structures.—Building materials; mechanics of construction; deri-

vation of practical formulas; masonry; foundations on land and in water; stability of walls and arches; analytical and graphical investigation of stresses in plate girders, Howe, Pratt, Warren and other types of highway and railroad bridges, and various forms of roof trusses; bridge design.

Text-books: Wheeler's Civil Engineering; Merriman and Jacoby's Roofs and Bridges; Merriman's Geodesy.

Equipment.

The collection of field instruments contains the following: Two 6-inch vernier compasses; 20-inch wye level; engineer's transit, with solar attachment and stadia; plane-table, with 9-inch telescope, vertical circle and stadia; drainage level; 12-foot self-reading leveling and stadia rod; 12-foot New York leveling rod; 10-foot cross-section rod, graduated; Gurley's clinometer, reading to degrees; two surveyor's chains; engineer's chain; standard 100-foot steel tape, graduated to hundredths of a foot; and full supply of ranging poles, flag poles and other accessories. There are also sets of drawing instruments for office work.

In addition to the drawing done under the immediate direction of the instructor in this division, the regular work in drawing and designing provided for civil engineering students is arranged with special view to their needs.

ENGLISH.

PROFESSOR FURMAN.

ASSISTANT PROFESSOR McLUCAS.

*ASSISTANT PROFESSOR DANIEL.

The purpose of the course in English is to enable the student to acquire the power to express his thoughts with clearness, precision and force; and to cultivate in him a taste for good literature. Elementary English grammar and the rudiments of composition are taught in the Sub-Freshman classes.

Freshman Class.

Lockwood's Lessons in English; Strang's Exercises; readings from Irving and Scott; exercises in composition; supplementary readings.

Sophomore Class.

Clark's Practical Rhetoric; weekly exercises in composition; supplementary readings.

*Absent on leave for one year, during which time his place will be supplied.

Junior Class.

Pancoast's English Literature; Hawthorne and Lemmon's American Literature; critical study of Macauley's Warren Hastings; monthly essays; supplementary readings.

Senior Class.

Study of Shakespeare; Dowden's Primer and the reading of three plays; advanced rhetoric; monthly essays; supplementary reading; exercises in elocution.

HISTORY.

PROFESSOR MORRISON.

The course in History includes History of the United States, South Carolina History, General History, Commercial Geography, Civics, and Political Economy.

The method of instruction is a combination of the text-book and lecture methods, with parallel readings, under the instructor's direction as far as practicable. The class-room is supplied with globe, charts, maps and works of reference, in the use of which the young men are carefully trained. The students make liberal use of the many volumes of poetry, historical romance, biography and history found in the College Library.

The History of South Carolina and the History of the South receive special attention. "A people which takes no pride in the noble achievements of a remote ancestry will never achieve anything worthy to be remembered by remote descendants." Every effort is made to enable the young men to see and feel as their fathers and forefathers saw and felt.

Text-books: Eggleston's History of the United States and its People (Subfreshman); Weber's History of South Carolina and Tilden's Commercial Geography (Freshman); True and Dickinson's Our Republic (Sophomore); Anderson's New General History (Junior and Senior); Walker's Political Economy—Briefer Course (Senior).

MILITARY SCIENCE AND TACTICS.

PROFESSOR SHANKLIN.

Junior and Senior Classes.

BOTH TERMS.—The course in military instruction, as prescribed and followed, is both theoretical and practical. The theoretical instruction, given by recitations and lectures, includes the subjects of organization and administration, grand and minor tactics, logistics, castrametation, military engineering, gunnery and pyrotechnics, military history, etc. The practical instruction includes infantry drill, in the school of the soldier, the company, the battalion and the evolutions of the regiment, in both close and extended order, target practice and guard duty, and in the manual of the piece in light artillery drill. Practice is also given in signaling with the flag.

In addition to the benefit which the general government derives from the military instruction given at this and other colleges, it is believed that the discipline enforced, the habits of punctuality and obedience inculcated, the improvement in bearing and appearance of those instructed, and also the practice in directing and commanding others, which nearly all in course of time get, is of immense benefit to the students individually.

TEXTILE INDUSTRY.

PROFESSOR BEATY.

MR. FRISSELL.

MR. RAIFORD.

The Textile Department of Clemson College now offers a thorough course of training in theoretical and practical knowledge as applied to the cotton industry. The students taking this course have the advantage of an exceptionally well equipped mechanical department, in which they receive their mechanical training parallel with their textile instruction. The course comprises a system of liberal education and culture as a part of the textile training as it is given at this College. The object has been to make a course in which students will be given not only special knowledge of textile subjects, but also the advantages of a good general education.

Carding and Spinning.

RAW MATERIALS.—The cottons of the world; their suitability for different yarns; botany of cotton; structure and composition of the fibre; selection of cotton for different classes of work; classification of cotton; conditions, favorable and unfavorable, to the manipulation of the fibre; strength of fibre; detection of faults in raw cotton; picking and handling of cotton; advantages and disadvantages of the saw gin, construction, speeds, etc.; roller gin, uses, speed, production, etc.; baling of cotton, square and cylindrical bales; compressing, and its effects on the fibre; testing for cotton and other fibres.

MIXING.—Reasons for mixing cottons; hand and machine mixing; the advantages and disadvantages of each system; blending, methods of blending, combining of cottons of different characteristics to produce special effects in the yarns.

PICKER ROOM.—The arrangement and construction of picker-rooms; dust trunks; their forms, construction and use; automatic feeders, their construction, action of the feeder on the cotton, speeds and adjustments of the various parts; the breaker-lapper, use, construction, different kinds of beaters, speeds and settings of the different parts of the machine; intermediate and finisher-lappers, feed rolls, evener motions; different kinds of beaters, speeds, settings, etc., advantages of each; shape and setting of screens; regulation of air currents; formation of a good lap; care and operation of lapper; all calculations on the above machines, drafts, length of laps, etc.

CARDING.—The principle and purpose of carding; different types of cards; construction of the feed plate, the lick-in, cylinder, doffer, coiler head, flats, screens, etc.; the different settings of the cards to produce the best results on different lengths and qualities of fibres; the regulation of waste made in the card; card clothing, and different methods of grinding the same; setting of the various parts of the card; calculations.

COMBING.—The purpose of combing; its necessity in fine counts of yarn; their action and operation explained; adjustment of various parts of the sliver lapper, ribbon lapper, and comber.

RAILWAY HEADS AND DRAW FRAMES.—Object, use, construction, advantages and disadvantages of railway heads; comparing metallic and leather rolls; explanation of stop motions and evener; calculations. Principle of drawing slivers; object and purpose of draw frames; method of setting the rolls; size and speed of rolls; distribution of draft between the rolls; stop motions and calculations.

FLY FRAMES.—Slubber, intermediate, roving and jack frames; construction of the modern fly frames; the bobbin and flyer lead,

method of driving the bobbin in each; the differential motion and its purpose; traverse, builder and stop motions; the formation of a bobbin; drawing rolls and their adjustment; calculations for drafts, twist, lay, tension and other gears.

SPINNING BOTH ON FRAMES AND MULES.—Construction and use of the ring spinning frame; its principal parts, such as rings, spindles, travellers, builder motion, etc.; the effect of twist on the strength, color and elasticity of the yarn; calculations; the spinning mule and its uses; special features; description of the head stock, cam shaft, and other parts; the copping rail and formation of a cop; different movements in the mule and timing of the same; calculations.

MISCELLANEOUS.—Reelings; bundling; twisting; doubling; spooling; warping, etc.; calculations and information regarding each process.

SLASHING.—The slasher, construction and use; necessity for slashing; creel, cylinders, size box, etc.; mixing of size; different sizing ingredients for special purposes; methods of preparing warps for the slasher.

Weaving.

DESIGNING.—Principles generally used in the formation of weaves; design paper and the method of representing weaves on same; explanation of warp and filling; the plain, or cotton, weave; twill weaves, satin weaves and method of construction; weaves derived from the plain weave: rib weaves, basket weaves; weaves derived from twills: broken, steep or diagonal, skip, reclining and curve twills; combination steep twills, corkscrew twills, entwining twills; twills producing checker-board effects, pointed twills; fancy effects produced with the plain weaves using colored warp and filling; effects produced by using two or more colors on ribs and basket weaves; weaves derived from satins, shading of satin weaves, figured effects produced by using warp and filling satins; honeycomb weaves; imitation gauze weaves; fabrics constructed by combining weaves with one system of warp and two systems of filling; figuring with two warps and one filling; double cloth, construction of double cloth weaves, method of indicating them on design paper, stitching of double cloth weaves to give figured effects, the double plain weave to give reversible figured effects; weaves for special fabrics: bedford cords, piques, matellasses; methods of making drawing-in drafts, chain drafts; methods used in reducing weaves to the lowest number of harness; plain and fancy drafts: point, skip, mixed or cross draws; rules for finding the number of heddles required for each harness.

JACQUARD DESIGNING.—Explanation of the Jacquard machine; Jacquard harness, tying up of the harness,—the straight through, center, French and English systems of tying up; the single and double lift Jacquard, the single and double cylinder machine; the open and closed shed machine explained; method of laying out patterns for Jacquard designs, size of sketch required; enlarging and reducing figures from sketches; comber board and method of figuring texture for same; casting out of hooks to reduce texture of goods; card cutting, lacing and wiring.

CLOTH ANALYSIS.—Methods used for arranging cloth for analysis; figuring the size of cotton, woolen, worsted and silk yarns; calculations for converting one system of yarns into that of another; finding the weights, counts, etc., from the analysis; reed calculations.

This work takes up all classes of weaves that can be woven on harness, and gives the student a thorough knowledge of figuring yarns, weights of cloth, ends and picks per inch, etc. The results obtained in this manner are very instructive, as they show the good and bad effects of various weaves and color combinations.

POWER LOOM WEAVING.—Construction of the plain loom; various shedding motions; side cam looms, setting the cams; pick motions, method of picking; take-up and let-off motions; box motions, drop box, skip box, timing and setting box motions; the dobby and its uses, pattern chains for single and index dobbies, setting and timing of the dobby; leno motion and setting of the same; doup harness and setting of same; Jacquard loom analyzed and explained.

Dyeing.

DYEING AND TEXTILE CHEMISTRY.—This course is at present confined to the Senior year, and is supplementary to the course in general chemistry pursued by all students in the Sophomore year. In addition to the general work of the Sophomore year, all Textile students are required to follow in the Junior year courses in qualitative and quantitative analysis, including the examination of such chemicals as are of special importance in dyeing.

The first half of the Senior year is devoted to the discussion and preparation of the organic compounds immediately related to the artificial coloring matters, as well as some of the typical colors themselves. In this work the student is familiarized with the operation by which the crude products found in coal tar are separated, purified and finally converted into such compounds as those used by the dyer. Instruction is given by lectures and laboratory work.

The work for the second half of the year consists of the application of coloring matters to the various textile fibres. This includes

an examination of the physical and chemical properties of the several fibres; explanation of the processes of scouring, bleaching and mordanting; a discussion of supply and waste waters of dye-houses; dyeing cotton, wool and silk with natural and artificial coloring matters. Instruction is given by lectures, experimental work in the laboratory, practical work in the dye-house. Each student is required to submit a comprehensive report of all experiments performed by him.

Building and Equipment.

The building is a capacious, two-story, brick structure, and although designed specially for educational and experimental work, yet retains the more prominent features of a modern mill.

The building is well equipped with complete systems of electric lighting, steam heating, humidifiers, shafting, automatic sprinklers, etc., all of which are installed in the most approved manner, from plans furnished by experienced mill engineers.

The equipment consists of: A system of "Vortex" humidifiers from the American Moistening Co.; system of steam heating, and automatic fire sprinklers, from the D. A. Tompkins Co.; shafting, hangers and pulleys, from Jones & Laughlin, Limited; electric motors from the Westinghouse Electric Company.

PICKERS—

One Atherton Automatic Feeder; one Atherton Combination Breaker and Finisher, Lapper, with evener motion.

CARDS—

One Saco and Pettee 40-in. Revolving Flat Card; one Mason 40-in. Revolving Flat Card; one Entwistle Traverse Wheel Grinder; two Entwistle Drum Grinders; Stripping and Burnishing Rolls; complete set Carder's Tools.

COMBING—

One Mason Sliver Lap Machine; one Mason Ribbon Lapper; one Mason Combing Machine.

RAILWAY HEADS—

One Saco and Pettee Railway Head, with evener motion, stop motion, and metallic rolls; one Mason Railway Head, with evener motion, stop motion, and metallic rolls.

DRAWING—

One Saco and Pettee Drawing Frame, 4 deliveries, stop motion, and metallic rolls; one Mason Drawing Frame, 4 deliveries, stop motion, and metallic rolls.

FLY FRAMES—

One Saco and Pettee 40-Spindle Slubber, with latest improved differential motion; one Saco and Pettee 60-Spindle Intermediate Roving Frame, with latest improved differential motion; one Saco and Pettee 80-Spindle Fine Roving Frame, with latest improved differential motion.

Spinning Department.**RING SPINNING—**

One Saco and Pettee Combination Warp and Filling Ring Spinning Frame, 128 spindles; one Mason Combination Warp and Filling Spinning Frame, 112 spindles; two Fales and Jenks Combination Warp and Filling Spinning Frames, 80 spindles each.

MULE SPINNING—

One Mason Spinning Mule, 120 spindles, $1\frac{3}{4}$ " gauge, with all latest improvements.

SPOOLING—

One Draper Spooler, 40 spindles; one Saco and Pettee Spooler, 72 spindles.

TWISTING—

One Draper Combination Wet and Dry Twister, 48 Spindles; one Fales & Jenks Wet Twister, combined Filling and Taper Top wind. 70 Spindles.

WINDING—

One W. W. Altemus & Son Bobbin Winder; one Atwood-Morrison Co. Bobbin Winder; one Geo. W. Payne & Co. Skein Winder.

REELING—

One D. A. Tompkins Co. Adjustable Reel, 50 Spindles.

WARPING—

One Draper Warper and Creel.

BEAMING—

One Entwistle Beaming Machine.

Weaving Department.**HAND LOOMS—**

Hand Loom Weave Room fully equipped with 4x4 box looms, fitted with 30 Harness Shedding Engines for fancy Cottons. Also Drawing-in Frames, Warping Frames, Beaming Frames, etc.

POWER LOOMS—

Two Northrop Looms, with warp stop motion and automatic filling magazine; one Mason Loom, 4x1 box, with Stafford 20 Harness Dobby; one Mason Loom, 1x1 box, 46-in. Reed Space, with Stafford 20 Harness Dobby; one Mason Fancy Cotton Loom, with 24 Harness Dobby; one Stafford Fancy Cotton Loom, 20 Harness Dobby, with Leno attachment; one Knowles Light Fancy Loom, "Gem" 30 Harness, 40-in. Reed Space, 4x4 box; one Kilburn & Lincoln Loom, 42-in. Reed Space, 4x1 drop box, arranged for Dobby; one Kilburn & Lincoln Loom, 42-in. Reed Space, 2x2 drop box, arranged for Dobby; one Stafford Dress Goods Loom, with Stafford 400 Hook, Single Lift, Swing Cylinder, Jacquard; one 624 Hook Jacquard Machine Tied for Weaving Damask, mounted on a Crompton, 4x1, drop box Loom.

JACQUARD CARD CUTTING—

One Jno. Royle French Index Foot Power Card Cutter.

DIVISION OF DYEING AND TEXTILE CHEMISTRY—

The work in Dyeing and Textile Chemistry is carried on in an experimental laboratory and a practical dye-house. These are equipped with the necessary apparatus and chemicals for instruction in organic chemistry, scouring, bleaching and dyeing.

The Experimental Laboratory is situated on the second floor, in the south end of the building, and has desk accommodations for thirty-two students. Each desk has a drawer and locker in which work may be preserved until it has been examined by the instructor.

The Dye House occupies the basement in the north end of the building, and is fitted up with the necessary apparatus for dyeing larger quantities of material than those operated with in the experimental laboratory.

The School is well equipped with Reels, Yarn Testers, Analytical Balances, and all necessary instruments for experimental purposes.

Donations.

The following donations are acknowledged with thanks:

The A. T. Atherton Machine Co., Pawtucket, R. I.—One Automatic Feeder; one Combination Breaker and Finisher Lapper; one lot of Lap Rods.

Saco & Pettee Machine Co., Newton Upper Falls, Mass.—One 40-in. Revolving Top Flat Card; one Entwistle Traverse Grinder; one Entwistle Drum Grinder; one Burnisher; one set Carder's Tools; one improved Railway Head, with back, front and full cam stop motion; one 4 Delivery Draw Frame with back, front and full cam stop motion, fitted with single preventer rolls; one 40 Spindle Slubber; one 60 Spindle Intermediate Roving Frame; one 80 Spindle Fine Roving Frame; one 128 Spindle Combination Warp and Filling Ring Spinning Frame; one 72 Spindle Improved Spooler. A sufficient number of gears were sent with these machines to make various changes that may be necessary.

Mason Machine Works, Taunton, Mass.—One 40-in. Revolving Top Flat Card; one Entwistle Drum Grinder; one Stripper Brush; one set Carders' Tools; one Railway Head, with back, front and full cam stop motion; one 4 Delivery Draw Frame, with back, front and full cam stop motion, fitted with single preventer roll; one 112 Spindle Combination Warp and Filling Ring Spinning Frame; one 40-in. Plain Loom; one 36-in. Fancy Cotton Loom; one 36-in. 24 Harness Dobby Loom. All necessary gears with these machines to make the required changes.

The D. A. Tompkins Co., Charlotte, N. C.—One Adjustable Reel; one Draw-in Frame; one Loom Box; one Doffer Box; two Section Beams; one Switch Board, complete.

Draper Co., Hopedale, Mass.—One 40-in. Northrop Loom; one 28-in. Northrop Loom; one 48 Spindle Combination Wet and Dry Twister; one 40 Spindle Spooler; one Warper, with Creel; four Section Beams; Temples as required; Loom Findings.

Schaum & Uhrlinger, Philadelphia, Pa.—One Top Engine Drive, self-balancing, hydro-extractor.

The Metallic Drawing Roll Co., Indian Orchard, Mass.—Metallic Drawing Rolls for Railway Heads and Draw Frames as required.

Westinghouse Electric Co., East Pittsburg, Pa.—One 220 Volt Direct Current Motor.

The Aerophor Co., Boston, Mass.—Complete system of "Vortex" Humidifiers, including pump, tank and connections.

Crompton & Knowles Loom Works, Worcester, Mass.—Reduction of one half on price of looms.

Fales & Jenks Machine Co., Pawtucket, R. I.—Two Combination Warp and Filling Spinning Frames, 80 Spindles each; one Wet Twister, combined Filling and Taper Top Wind, 70 Spindles.

Kilburn & Lincoln Co., Fall River, Mass.—Two Cotton Looms, 42-in. Reed Space and arranged for Dobbies.

W. W. Altemus & Son, Philadelphia, Pa.—One Bobbin Winder.

New Bedford Paper Co., New Bedford, Mass.—Caps, Cones, Tubes, etc., as required.

Charlotte Supply Co., Charlotte, N. C.—All belting as required.

American Supply Co., Providence, R. I.—Heddles, Heddle Frames, Reeds and Loom Supplies as required.

Loom Picker Co., Biddeford, Me.—Loom Supplies.

The Emmons Loom Harness Co.—Cotton Harness, Reeds and Loom Supplies.

Sykes & Street, New York, N. Y.—Collection of Dye Stuffs.

New York and Boston Dyewood Co., New York, N. Y.—Collection of Dye Stuffs.

Victor G. Bloede & Co., Baltimore, Md.—Collection of Dye Stuffs and Mordants.

Wm. J. Matheson & Co., New York, N. Y.—Collection of Dye Stuffs.

Wm. Pinkhardt & Kutroff—Collection of Dye Stuffs.



SPECIMEN ENTRANCE EXAMINATIONS.

The following questions represent typical examinations for entrance to the Freshman class. They will be found useful in suggesting the character of preparation that an applicant should have.

Mathematics.

For admission to the Freshman class thorough proficiency is required in arithmetic, and in algebra through simple affected quadratics. Following is a type of the entrance examination in algebra:

I. Simplify:

$$2x^3(x-3a)-2[2x^4-a^2(x^2-a^2)]-3a[x^3-2x\{a^2+x(a-x)\}+a^3].$$

II. Divide:

$$12x^{5n-3}-x^{4n-2}-20x^{3n-1}+19x^{2n}-10x^{n+1} \text{ by } 4x^{2n}-3x^{n+1}+2x^2.$$

III. Reduce to its simplest form:

$$\left(\frac{x^3-8y^3}{x(x-y)}\right) \left(\frac{x^2-xy+y^2}{x^2+2xy+4y^2}\right) \div \left(\frac{x^3+y^3}{x(x^2-y^2)}\right)$$

IV. What is the value of x in:

$$\frac{6-5x}{15} - \frac{7-2x^2}{14(x-1)} = \frac{1+3x}{21} - \frac{2x-2\frac{1}{2}}{6} + \frac{1}{105}$$

V. Solve for x , y and z .

$$\begin{cases} 3x-4y=6z-16 \\ 4x-y-z=5 \\ x=3y+2(z-1) \end{cases}$$

VI. What values for x and y will satisfy:

$$(a-b)x+(a+b)y=2(a^2-b^2) \text{ and } ax-by=a^2+b^2?$$

VII. If $\frac{2}{3}$ be added to the numerator of a certain fraction, the fraction will be increased by $\frac{1}{21}$, and if $\frac{1}{2}$ be taken from its denominator, the fraction will become $\frac{2}{9}$. What is the fraction?

VIII. Solve for x :

$$\sqrt{a+\sqrt{x}} + \sqrt{a-\sqrt{x}} = \sqrt{x}$$

IX. Find the 6th root of:

$$1+6x+x^6+6x^5+15x^4+20x^3+15x^2.$$

X. Solve for x :

$$\frac{2x+1}{7-x} + \frac{4x+1}{7+x} = \frac{45}{49-x^2} + 1.$$

History.

- I. Tell of Raleigh's expeditions: 1. How many. 2. Where. 3. Results.
- II. Name and briefly describe three early Indian wars.
- III. Name Colonial wars between England and France. State general results.
- IV. Name the thirteen colonies and tell the kind of government each had at outbreak of the Revolution.
- V. What cities have been the capital of the United States?
- VI. Tell of the successes of our navy in the War of 1812. 1. At sea. 2. On the lakes.
- VII. Tell of the Mexican War: 1. Causes. 2. Campaigns. 3. Results.
- VIII. Name six accessions to our territory.
- IX. Name three great American inventors and tell their inventions.
- X. Name two American poets and two novelists. Mention a work of each.

English.

NOTE—Those students who have formed the habit of reading good literature usually pass the examination with most ease. Reading books by good authors is conducive to correctness and ease of expression. It is urged, therefore, that each applicant see to it that he is familiar with several books by reputable authors. It is not intended to require that certain books shall have been read, but the following are mentioned as suggestions:

DeFoe's Robinson Crusoe, Swift's Gulliver's Travels, Hughes' Tom Brown's Schooldays, Cooper's Last of the Mohicans, Scott's Ivanhoe, Dickens' Oliver Twist, Dickens' History of England, Goldsmith's Deserted Village, Longfellow's Evangeline.

- I. SPELLING. (Fifty common words difficult to spell.)
Group, salmon, mahogany, fierce, cataract, valise, muscle, twelfth, seize, onion, February, carrot, million, banana, pumpkin, neuter, heifer, salad, mystery, excel, pallid, bosom, lithe, gallop, wizard, pommel, swollen, cyclone, exhaust, partridge, tenement, exhibit, robin, bureau, luscious, rabbit, judgment, label, peaceable, succeed, colonel, vengeance, transferable, penitentiary, piteous, criticise, analyze, inseparable, independent, abstinence.
- II. READING. Read aloud distinctly and intelligibly a short passage from some ordinary prose.
- III. WRITING. Write a composition of one page on some easy subject; such as, "Why I Wish to Go to College," "My Previous Educational Advantages," "A Picture of My Home," "A Runaway." (In this you will be graded on penmanship, grammatical correctness, ability to say what you intend, and general neatness.)
- IV. GRAMMAR. (The analysis of the sentence is regarded as more important than the parsing of words.)
1. Give the principal parts of the following verbs:
Swim, wake, burst, sink, swing, drink, see, attack, cling, eat.

TYPE CLASS EXAMINATIONS--JUNE 14, 1901.

 Junior Calculus Examination.

(Professor Brodie.)

I. If $y = \sin(\sin x)$ prove

$$\frac{d^2y}{dx^2} + \frac{dy}{dx} \tan x + y \cos^2 x = 0.$$

II. Show that the curve $y = \sin^3 x \cos x$ has its maximum ordinate when $x = \frac{\pi}{3}$

III. The top of a column which sustains a statue 11 feet high is 25 feet above the level of a man's eye. Find his horizontal distance from the column when he sees the statue subtending the greatest angle.

IV. Prove:

$$\int \frac{(2x^3 + 7x^2 + 6x + 2)dx}{x^4 + 3x^3 + 2x^2} = \log \left[x(x+1) \left(\frac{x}{x+2} \right)^{\frac{1}{2}} \right] - \frac{1}{x}$$

$$V. \quad \int \frac{x^{\frac{1}{3}} dx}{x^{\frac{1}{2}} + 2x^{\frac{2}{3}}} = \frac{3}{4}x^{\frac{2}{3}} - \frac{1}{2}x^{\frac{1}{2}} + \frac{3}{8}x^{\frac{1}{3}} - \frac{3}{8}x^{\frac{1}{6}} + \frac{3}{16} \log(1 + 2x^{\frac{1}{6}})$$

$$VI. \quad \int \sin^8 x \, dx = \frac{1}{16} \left\{ \frac{35x}{8} - 4 \sin 2x + \frac{2}{3} \sin^3 2x + \frac{7}{8} \sin 4x + \frac{\sin 8x}{64} \right\}$$

VII. Explain and find value to four terms of $\int \frac{\cos x \, dx}{x}$ VIII. Find total length of the hypocycloid whose equation is $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$.IX. The figure bounded by $x=a$ and the parabola $y^2=4px$ is revolved about the line $x=a$. Show that the volume generated is $\frac{1}{15}(32\pi a^2 \sqrt{pa})$

X. Prove:

$$\int_0^2 \int_0^x \int_0^{x+y} e^{x+y+z} dx \, dy \, dz = \frac{e^8 - 3}{8} - \frac{3e^4}{4} + e^2$$

FINAL EXAMINATION MAY, 1901--SENIOR CLASS.

Agricultural Sections. Agricultural Chemistry.

PROFESSOR HARDIN.

- I. In the manufacture of acid phosphates from phosphate rock, free phosphoric acid, mono-calcium phosphate and bi-calcium phosphate may be formed.
Write equations expressing the reactions in each case and state the reaction especially desired in the manufacture of fertilizers.
- II. Write equation expressing the formation of "reverted" phosphate when the reversion is due to the presence of undecomposed phosphate rock in the acid phosphate.
- III. How would you determine the proportion of chamber acid necessary for the proper manufacture of an acid phosphate from a given phosphate rock?
- IV. What change does the soluble phosphate undergo when an acid phosphate is applied to the soil? Why is the phosphoric acid of acid phosphates not liable to be washed out of the soil and why is the action of a freshly applied acid phosphate more marked than that of the residue left in the soil from an acid phosphate applied a previous year?
- V. Mention some animal and vegetable manures used as sources of nitrogen. State the approximate percentage of nitrogen in each and calculate the equivalent percentage of ammonia.
- VI. Calculate the per cent. of potassium in pure potassium chloride. To what per cent. of potash (K_2O) is this equivalent? What is the usual guarantee of commercial muriate of potash?
- VII. Into what three groups may food of animal origin be divided? What additional group is there in foods of vegetable origin?
- VIII. Find the nutritive ratio of a food from the following data:

	Percentage Composition	Digestion Coefficient
Protein	12.3	55
Fibre	24.8	46
Nitrogen—free extract	38.1	64
Fat	3.3	53
- IX. What is the average composition of cow's milk? Which constituent is the most variable?
- X. How does butter differ in composition from oleomargarine?

FRESHMAN EXAMINATION IN AGRICULTURE--JUNE, 1901.

PROFESSOR NEWMAN.

- I. Explain what is comprehended in the study of agriculture as an applied science.
- II. How is good texture of the soil obtained? Explain its beneficial effects upon the physical condition of the soil. How, and through what agencies, does it affect the chemical constituents in the soil?
- III. What do you understand by "soil mulch"? Explain its influence upon soil moisture.
- IV. Name the three most important elements of plant food. Name the principal commercial sources of each. Mention some important legumes. What do they do for the soil? How used?
- V. How do plants grow? Explain the uses of the different parts in the economy of the plant. How do plants reproduce? How do the essential organs of reproduction occur in different plants? Give examples.
- VI. Discuss the protection and improvement of worn hill lands. Describe the best means used for their protection. How are they most economically improved?
- VII. Tell how to provide fresh, green food for stock throughout the year by a combination of pasturage and green soiling crops. Tell what crops you would use at different seasons and how to grow them.
- VIII. What is meant by the "free water" of the soil? How may it be removed? Tell how its removal benefits the soil.
- IX. Discuss plant breeding for the purpose of improving the quality and increasing the quantity of production. Explain the difference between a cross and a hybrid.

AGRICULTURAL JUNIOR CLASS.

Final Examinations in Plant Diseases, June, 1901.

MR. ROLFS.

- I. Give complete discussion of:
 - (a). Bordeaux mixture, its preparation and use.
 - (b). Hydrocyanic acid gas, its use and its limitation (include lecture).
- II. Write an essay of 200 words (a) on the use of technical terms and (b) state your objections to their use.
- III. (a). Name and describe the nine divisions under which our author discussed fungi. (b). Give the best general "preventative means" for each division.

- IV. Grape Mildew—Give, 1, Technical name; 2, Full life history; 3, Effect on host; 4 and 5, Preventative means (full).
- V. (a). Hop Mildew—1, Technical name; 2, General discussion; 3, Preventative means. (b). Sooty Mould of Orange—1, General discussion; 2, Natural and artificial preventative means.
- VI. Apple Tree Canker—1, Technical name; 2, Plants attacked; 3, General discussion; 4, Preventative means.
- VII. Sclerotium Disease—1, Technical name; 2, Plants attacked; 3, Life-history; 4, General discussion; 5, Preventative means.
- VIII. (a). False Tinder Fungus—1, Technical name; 2, General discussion; 3, Preventative means. (b). Dry Rot—1, Technical name; 2, General discussion; 3, Preventative means.
- IX. Rice Smut—1, Technical name; 2, Distribution; 3, Preventative means.
- X. (a). Asparagus Rust—1, Technical name; 2, General discussion; 3, Life-history. (b). The Hawthorn Cluster-cups—1, Technical name; 2, General discussion; 3, Complete life-history; 4, Preventative means; 5, Why did we study this cluster-cups?

AGRICULTURAL SENIOR EXAMINATION. STOCK FEEDING.

June, 1901.

ASSISTANT PROFESSOR CONNER.

1. a. By what is the protein consumption in the body measured?
b. What influence has the feeding of fat and carbohydrates on the protein consumption?
c. What is the effect of feeding protein alone?
d. What is the influence of salt on protein consumption?
e. From what is fat formed in the body?
2. a. Of what does the increase consist in fattening?
b. What per cent. of the food is used by the steer to put on fat?
c. Explain "wide and narrow ration."
d. Where may each be used to advantage?
e. Explain method of calculating ration.
3. a. Give feeding value of corn to steers.
b. What is the feeding value of the corn cob?
c. When may wheat be fed in the place of corn?
d. Why is it best to feed a horse on oats?
e. Give the value of C. S. meal and linseed meal as a food for stock.
4. a. At what stage would you cut corn, sorghum and cow pea vines for forage?
b. How does loss occur in saving forage by field curing and in the silo?
c. What effect has rain or dew on partly cured hay?

- d.* Name and give value of some of our grasses and legumes valuable for hay and pasture in the South.
5. *a.* What does oat straw furnish when used as a stock food?
b. Give the advantages of soiling.
c. When does it pay to cook or soak food for stock?
d. Does it pay to grind grain for hogs?
6. *a.* Why does silage increase the milk flow?
b. What gives value as a fertilizer to manure?
c. How much work will a horse do in 10 hours walking 3 miles per hour, drawing 75 pounds?
7. *a.* Should grain be fed to steers on pasture?
b. Why is not shelter as necessary for fattening stock as for milch cows?
c. How often should beef cattle be fed?
d. What is the value of breed in beef making?
8. *a.* Can the per cent. of fat in the milk be changed by feeding?
b. What per cent. of the food is changed into milk and butter fat by the cow?
9. *a.* What is the feeding value of skim milk when fed to hogs?
b. What other kind of food should be fed with skim milk?
c. What gives feeding value to whey?
10. *a.* Which of the three—sheep, swine or cattle—eat most per 100 pounds, live weight?
b. Which require most per 100 pounds gain?

SENIOR EXAMINATION--HYDRAULICS--SECOND TERM, 1901.

PROFESSOR BOEHM.

1. A circular tank, 30 ft. dia. and 10 ft. high, has a pipe 8 in. dia. and 115 ft. high opening into its upper surface. An ordinary pressure gage (reading pounds above atmosphere) is tapped into the side of the tank at its middle, gage being 60 ft. above that point and also 60 ft. below surface of water in pipe. How many pounds pressure does gage indicate?

2. A rigid gate between the head and tail waters of a flume has a circular plate 1 ft. dia. submerged 3 ft. below the surface of tail water. When the difference in water levels is 2 ft., what is the total pressure in pounds with which this plate is held against the gate?

3. The upper and lower edges of a 2 ft. by 1 ft. rectangular plate are respectively 3 ft. and 4 ft. below the surface of the water in the tank, per sketch. What force in pounds at lever handle will be required to lift plate, leverage being 10 to 1?

4. Compute the number of cu. ft. of water flowing per min. through a rectangular weir notch 2 ft. in width, when there is a head of 1 ft. measured well back of crest.

5-6. By actual measurement, the average depth and width of a stream are 4 ft. and 30 ft. respectively. A chip thrown into midstream was carried by the current over a measured course of 100 ft. in $\frac{1}{2}$ minute, and if this stream be developed for power purposes a fall of 20 ft. can be secured. Assuming mean velocity of stream to be 85 per cent. of velocity of float in mid-stream, and efficiency of good water wheels to be 80 per cent. under a head of 20 ft., what horse power would be available at pulley of water wheel?

SENIOR MECHANICAL ENGINEERING--JUNE, 1901.

PROFESSOR BUEHM.

1. The ultimate shearing strength of cold rolled shafting being 40,000 lbs. per sq. in., show that with a factor of safety of 5, the diameter (d) of a shaft to transmit a given horse power (H. P.) at a given number of revolutions (n) may be obtained from the formula—

$$d = \sqrt[3]{\frac{40 \text{ H. P.}}{n}}$$

2. What is the maximum horse power that can be transmitted by a 2" cold rolled shaft making 200 R. P. M.?

3. Compute the width of a single leather belt to transmit 10 H. P. on 50" pulleys making 300 R. P. M.

4. How many H. P. will five $\frac{3}{4}$ " hemp ropes transmit on equal pulleys having 45° grooves, speed of ropes being 5,000 feet and working stress 150 lbs. pr. sq. in.?

5. What is the maximum steam pressure that may be carried without danger on a 48"x16' horizontal tubular boiler having double riveted side seams, and plates $\frac{1}{4}$ " thick, having an ultimate tensile strength of 60,000 lbs. pr. sq. in.?

6. An upright shaft, having a flat circular bearing 3" in dia., weighs, with pulleys, 2,000 lbs. and transmits 20 H. P. at 200 R. P. M. What is the efficiency of transmission, coefficient of friction being .05?

7. Describe the Sciele pivot bearing for upright shafts and state its principal advantage over the ordinary flat circular bearing.

8-9. An 18"x36" Corliss engine making 80 R. P. M. develops 90 H. P. when boiler pressure is 100 lbs. pr. sq. in. The diam. of the driven pulley on jack shaft is 36" and governor driving and driven pulleys each 9" dia. What changes would be necessary to increase the power of this engine to 100 H. P. without increasing the boiler pressure?

10. What is the maximum number of revolutions per minute that you would allow for a *sound* cast iron fly wheel 12 ft. in diam.?

JUNIOR KINEMATICS--JUNE 18, 1901.

ASSISTANT PROFESSOR BARNES.

1. Define: Circular pitch; pure mechanism; velocity; intermittent motion; angle of action, in gearing.
Distinguish between rolling and sliding contact.
State the manner of generating the following curves: logarithmic spiral; epicycloid; hypocycloid; involute.
2. State the conditions necessary that a set of gears may be interchangeable.
Show by *diagram* a method of producing intermittent motion when the driver is a shaft with uniform angular velocity; also one method when the driver is a screw revolving at uniform speed.
3. A train runs at the rate of 110 miles in 2 hours and 40 min. The locomotive drivers are 64 inches in diameter, and the stroke of the piston is 22 inches. Find (a) the velocity of the engine relative to the earth; (b) the average velocity of the piston relative to the frame of the engine.
4. A pair of grooved friction wheels have pitch diameters of 10 ft. and 5 ft.; the working depth of the grooves equals 2 in.; the pinion makes 150 rev. per min. Find the maximum sliding action in feet per min., assuming no slip at the pitch lines.
5. A motor furnishes 10 H. P. The speed of the driving pulley on the motor is 1,330 rev. per min. If this pulley is 6" in diam., find (a) size of pulley to be used on line shaft so that the speed may be 190 rev. per min.; (b) the width of double belt necessary to transmit the power to the shaft; (c) the size of shaft suitable for this work.
6. Two parallel shafts are 24" apart, and are connected by two gears of 4 pitch. The first shaft has a speed of 150 rev. per min. The velocity ratio between this and the second shaft is 5 to 7. Find (a) the speed of the second shaft; (b) the number of teeth on each gear; (c) the outside diameter of each gear; (d) the largest size of pulley that can be used on the motor shaft in Prob. No. 5 that will not cause the belt to run at a greater velocity than the safe limit.
7. Prove fully by diagram and demonstration that cones can be used to transfer motion with a definite velocity ratio between shafts that are neither parallel nor intersecting.
8. Name four modes of transmitting motion.
Define an elementary combination, and name the three classes of the parts of a machine.
Name one point in favor of and one point against the use of involute gears.
9. Design and explain a Whitworth Quick Return Motion, in which the return is made during 90 degrees of the rev. Find the distance between the centers of the rotating parts if the arm of the shaft is 8" (No. 9) long.
10. Find the train for a 30-day clock, the barrel to carry 24 turns of weight cord; escapement to have 30 teeth, and pendulum to vibrate 60 times per min. Assume sizes for wheels and pinions.

EXAMINATION SENIOR CLASS--ELECTRICAL ENGINEERING--JUNE 4, 1901.

 Alternating Currents.

 PROFESSOR RIGGS.

- I. Explain fully, illustrating by example, the following: (1) Maximum, average, and effective values of C or E . (2) Reactance; impedance. (3) Reactive and active pressures. (4) Apparent and true power—p. f.
- II. A laminated wrought iron ring whose $A=10$ sq. cms. mean circumference= $1,256$ cms., wound with 500 turns, is traversed by an alternating sinusoidal current whose maximum value= 70.72 —working permeability of the core= 500 , $f=127.5$; resistance of coil= 10 ohms. Find (1) Inductance of coil. (2) The time constant. (3) Reactance. (4) Impedance of coil. (5) Reactive drop. (6) Ohmic drop. (7) Impressed pressure. (8) Phase angle. (Illustrate graphically 3, 4, 5, 6, 7, 8.)
- III. A 60 cycle, 2 phase, syn. motor, situated 15 miles from the generator, is supplied with 90 K. W. at 10,000 volts. Allowable energy lost in the line 9% of the delivered power—p. f. of load 90%. Find (1) Nearest size B & S for the transmission lines. (2) With wire selected, calculate the actual energy lost in the lines. (3) Eff. of transmission in terms of delivered power. (4) Line impedance. (5) (Graphically) Voltage at generator terminals (either phase.)
- IV. A 1,000 volt, 127.5 cycle generator is used for lighting a town. Ten arc lights, each having an $L=.0075$, and a resistance of 7 ohms, are arranged in series on a No. 10 B. & S. circuit 10,000 ft. around. In parallel with the arc line is a similar circuit containing ten series inc. lights, each having a resistance of 9 ohms. Find for each circuit (1) Impedance. (2) Current. (3) True and apparent power. (4) p. f. of each circuit. (5) Efficiency of each circuit. (6) What detrimental effect has the self induction of the arc lamps?
- V. An induction motor "A," whose apparent $L=.0125$ and $R=.20$ is operated in parallel with an overexcited syn. motor "B," which acts like a circuit having a capacity of 500 m. f. and 15 ohms resistance. The distance between gen. and motor is 5 miles, and the circuit is of No. 3 B. & S. wire, run 12" between centres. $f=63.7$ voltage at the load terminals 1,000 volts. Find for each circuit the following: Z_A & Z_B . (2) C_A & C_B . (3) ϕ_A & ϕ_B . (4) Impedance of A & B together, Z_{AB} . (5) Line impedance, Z_L . (6) Total impedance. (7) Generator voltage.
- VI. Explain fully the construction and operation of an induction motor. Problem: A 60 cycle induction motor has a 6 pole stator winding; the slip at full load is 10%. Find motor speed at full load.

- VII. Explain the operation of a syn. motor, showing how it can take current to meet its load demands, in operating at a constant speed and field excitation. *Problem*: The self-induction of a syn. motor $= .0075$ and resistance $= 2.5$ ohms. Terminal voltage of motor 1,000 volts. Motor excitation is adjusted to 1,100 volts. $f = 63.7$. Input current $= 100$ amp. Find graphically the following: (1) Necessary resulting E. (2) ϕ_1 ϕ_2 . (2) Power input and p. f. (3) Power converted by motor. (4) Elec. eff. (5) Would it improve the p. f. to diminish the motor's excitation to give 800 volts instead of 1,100?
- VIII. Explain (1) the star and mesh 3 phase armature connections. (2) *Problem*: A 60 K. W., 4,000 volt generator having a star connected armature is reconnected as a mesh. (a) What will be the terminal voltage in the latter case? (b) What the relative heat loss in the armature conductors at full load?
- IX. A 4-pole, 60-cycle, single, two or three-phase rotary converter has a multiple wound armature of 500 conductors. The flux per pole is 1,000,000 lines. Diagram the connections between the collector rings and armature windings for each conversion. (2) Calculate the D. C. voltage, and the single, two and three-phase voltage at the collector rings.
- X. Explain action of a transformer (1) With secondary open. (2) With sec. loaded. (3) What is meant by the exciting and the magnetizing currents in a trans.? (4) What is meant by "ageing"—the cause and remedy? (5) State relative advantages of open and closed magnetic circuit trans. *Problem*: With the sec. circuit open, 10 amps. flow in the primary of a 100 K. W. trans. under a terminal pressure of 1,000 volts. A Watt metre connected in the primary circuit reads 1,000 Watts. (1) Compute the wattful component of the exciting current. (2) Find graphically the magnetizing comp.
- XI. A 5 K. W. trans. has the following net Effs.: At full load, 95%; at $\frac{3}{4}$ load, 94%; at $\frac{1}{2}$ load, 92%; at $\frac{1}{4}$ load, 90%. Iron losses at all loads 75 watts, and heat loss in primary due to exciting current when sec. is open 5 watts. This trans. is operated for 5 hours at full load, 5 hours at $\frac{3}{4}$ load, 2 hours at $\frac{1}{2}$ load, 2 hours at $\frac{1}{4}$ load, and the remaining hours of the 24 at no load. Find its all-day efficiency.
- XII. *Practical Questions*: Discuss briefly the relative advantages of high and low frequency for light and power. (2) what is the relative amount of copper required for a single phase, two phase 4 wire, two phase 3 wire, and three phase 3 wire systems? (3) What are the objections to making a large polyphase syn. motor self-starting? (4) How are trans. rated, and what allowance must be made in their capacity for work on an induction load? (5) What is a balance polyphase system?

JUNIOR CLASS--SECOND TERM.

PROFESSOR RIGGS.

1. (a) Show that the heat loss in a conductor of resistance R , carrying a current of C amperes is C^2R ; (b) Prove that a mechanical horse power = 746 watts.

2. Briefly outline the construction and operation (a) of an open arc lamp; (b) of an enclosed arc lamp; (c) of an incandescent lamp; (d) give practical rule for connecting arc light carbons properly in the circuit.

3. Explain fully the generation of E. M. F. in a dynamo, describing the essential parts of the machine, and explaining fully the function and operation of the commutator.

4. Explain fully the operation of an electric motor; the generation of C. E. M. F. in the armature of the motor and the effects.

5. (a) Explain three methods of exciting the fields of dynamos. (b) Define the following terms: Electrical, gross, and net eff.

6. 125-10 amp. 2,000 (nominal) c. p. open arc lamps requiring each 450 watts are placed in a series circuit of No. 8 B. & S. wire 5,000 feet around; Armature resistance = 1 ohm; series field $R = 2$ ohms. Find: (1) Necessary p. d. at generator terminals; (2) E. M. F. of generator; (3) Eff. of line trans.; (4) Electrical eff. of generator; (5) Electrical eff. of line and generator together.

7. 508-20 c. p. 3.2 watts—108.3 volts incandescent lamps are situated in barracks, which is 590 ft. distant from the power station. The maximum allowable loss in trans. is 5 per cent. Find: (1) nearest size (or sizes) B. & S. wire that should be used; (2) with this wire the necessary p. d. at the generator terminals; (3) Eff. of trans. attained.

8. A shunt generator furnishes to a bank of incandescent lamps 300 amp. at 120 volts. Mechanical losses in generator = 1 H. P.; iron losses in arm. core $\frac{1}{2}$ K. W.; Arm. $R = .01$ ohm; shunt field $R = 30$ ohms. Find: (1) Net eff.; (2) Elec. eff.; (3) Necessary H. P. that must be applied to generator pulley; (4) Net eff. of generator at an output of 50 amp.

9. A shunt motor is supplied with 102 amp. at 500 volts. Motor's iron losses = 200 watts; mechanical losses $\frac{1}{2}$ H. P.; Arm. $R = .1$ ohm; shunt field $R = 250$ ohms. Find: (1) C. E. M. F.; (2) Net eff. of motor; (3) H. P. at motor pulley.

10. Find the relative cost of copper for trans. 500 K. W. with a limiting loss of 10 per cent., a distance of 5,000 ft., copper being worth \$.20 per lb. (use nearest size or sizes B. & S.), (1) at 10,000 volts; (2) at 5,000 volts; (3) at 1,000 volts.

11. The Textile School motor is rated at 30 H. P.—220 volts—85% net eff. Its distance from the power plant is 1,000 ft. The line for one-half this distance is composed of two No. 1 B. & S. wires in parallel; the other half of the line is of a single No. 0000 B. & S. wire. Find: (1) line drop; (2) p. d. at generator terminals.

12. It costs in the Clemson power plant about \$.05 per K. W. hour, to produce power. The pumping station is situated 2,500 ft. from the plant, and the motor therein is connected to the plant by a No. 000 B. & S. wire. The switch board instruments show that the motor line is furnished with 50 amp. at 230 volts, for about 8 hours per day for 300 days of the year. Would it pay the College to borrow money at 7% interest and run an additional No. 0000 B. & S. wire in parallel with the first in order to reduce the line losses, copper being worth \$.20 per lb., and the additional line construction, say \$50.00 per thousand feet of distance?

EXAMINATION SENIOR CIVIL ENGINEERING--JUNE, 1901.

PROFESSOR BRODIE.

BRIDGE ENGINEERING.—A through Pratt, single track, railroad bridge, with span of 144 feet, has six panels and a depth of 26.9 feet. It is designed to carry a live load of two coupled, consolidation locomotives, 139 tons each, followed by 1.6 tons per lineal foot of train load. (Weights and spacing of wheels as shown on diagram).

Compute maximum live load stress in:

- I. First diagonal.
 - II. First panel of lower chord.
 - III. Third diagonal.
 - IV. Second vertical.
 - V. Counter diagonal in third panel.
- Compute for uniform live load of 44 tons per panel per truss:
- VI. Second diagonal.
 - VII. Counter in second panel.
 - VIII. First vertical.
 - IX. Find the uniform load per linear foot that will cause the same maximum bending moment in a beam of 20 ft. span as the drivers of a passenger locomotive, each weighing 40,000 pounds, and 8 feet apart.
 - X. Prove that for maximum moment from wheel loads $P = \frac{n}{m} W$, or that the weights on the segments of the span are proportional to the lengths of the segments.

TEXTILE DEPARTMENT--JUNIOR CLASS.

Examination June 1901.

PROFESSOR BEATY.

No. 1. Most modern mills use the English system of drawing, *i. e.*, the carded slivers are run through 3 heads of drawing, doubling 6 into 1 at each head. Some of the older mills use a railway head and 2 heads of drawing. Discuss fully the advantages and disadvantages of each system.

(b). Drawing frames have, generally, four lines of drawing rolls. On some drawing frames the top rolls are covered with leather, while in other drawing frames metallic top rolls are used. Compare the meritorious features of the two systems.

Also give approximate setting distances of each of the above rolls, running on $1\frac{1}{4}$ " American cotton.

(c). In carded slivers the composing fibres are disposed in all directions. In the finished yarn, the fibres are supposed to approach something like a parallel order, with regard to each other. Name the machine or machines in which this parallelization of the fibres is effected.

Describe by sketch and word how this parallelization is effected.

(d). Give a full discussion as to the necessity of drawing slivers, before they are subjected to the twisting processes.

No. 2. Sketch the "compound" or "differential" motion on a roving frame, and describe (1) its purpose; (2) how this purpose is accomplished; (3) what parts of the mechanism of the frame directly govern the workings of the differential, and (4) what motions in the frame are directly governed by the action of the differential?

No. 3. Let R =Large end of driving cone.

r =Small end of driving cone.

D =Diameter of full bobbin= 3.5 ".

d =Diameter of empty bobbin= $17-16$ ".

T =Sum of diameters of cone= 10.5 ".

Calculate the diameters of the driving cone at the beginning of the set, and at the end of set. These results will also represent the end diameters of the driven cone in inverse order.

(b). Deduce the formulae—

$$X = \frac{T R d}{rd_2 + Rd} \quad \text{and} \quad x = \frac{rd_2 T}{Rd + rd_2} \quad \text{when } X \text{ and } x$$

represent the diameters of the two cones respectively at any points, corresponding to each other in the length, and that d_2 is the diameter of the bobbin at that point in its build where the position X is the correct one for the cone belt. Substitute the other values from the first part of example No. 3.

No. 4. Briefly outline the automatic action of the traveller in winding the yarn on the bobbin, in the process of spinning.

(B). Compare the winding of yarn, by the spindle and traveller, in spinning, with the winding of roving, by the spindle and flyer, in roving frames.

TEXTILE DEPARTMENT--JUNIOR CLASS.

Examination February, 1901.

PROFESSOR BEATY.

12.5 X yards

- No. 1. (A). Prove that $\frac{\text{12.5 X yards}}{\text{weight in grains}} = \text{worsted counts}$.
- (B). If you have 100 pounds weight of 3-ply yarn, made from 80s, 40s and 30s worsted, what would be the counts of the 3-ply?
- (C). Twist together a 10 run wool, a 20 cut wool and a 60s cotton yarn. What would be the weight in grains of 120 yards of the resultant yarn? What would be its equivalent in worsted counts?
- No. 2. (A). Why is it necessary to give attention to the proper mixing of cotton?
- (B). State fully your objections to using from a small mixing?
- (C). What are the advantages derived from breaking up cotton as it is received in the bales, and letting it stand in an open stack for some time, before using? How far does this aid in the subsequent operation of opening?
- No. 3. (A). What is the primary function of a lapper? Describe how this function is performed?
- (B). What is the secondary function of a lapper? Describe how this function is performed?
- (C). State the necessity of having a "piano motion" on a lapper, and describe how it performs its work?
- (D). If a lapper produces 12,000 pounds of laps per week (60 hours), how many lappers are required for a mill containing 90,000 mule spindles, spinning 60s cotton, and producing 23 hanks per spindle per week, waste not considered?
- (E). If you were making a 35 pound lap at the breaker lapper and wished to alter the feed so as to make a 40 pound lap, how would you do it?
- No. 4. (A). Name and describe the dual operation performed by the lick-in teeth?
- (B). What effect would changing the draft gear have on the speed of the doffer?
- (D). Describe the action of each part of the card, on the cotton fibres, as they pass through, from the feed roll to the coiler can?
- (D). A card is producing a 50 grain sliver; the change gear has 18 teeth; the draft constant is 1500; allowing 4% for waste, what is the hank lap entering the card?
- No. 5. (A). Suppose you began with a drawn sliver .160 hank and produced a slubbing 1.6 hank; two ends of slubbing put through the

intermediate frame gives 3.5 hank, and two ends of intermediate roving through the fine roving frame gives a 9 hank; what are the drafts in the intermediate and fine roving frames respectively?

- (B). Yarn number 40s is being spun from a double roving with a 40 tooth draft gear, each end of roving being a 6 hank; with what draft gear can the same number be spun from a 4.5 hank, using single roving?
- (C). If the diameter of a cotton thread No. 30s is $1/143$ ", what is the diameter of No. 60s cotton yarn? The diameters of cotton yarn varying inversely as the square root of the numbers.
- (C). Give sketches showing the difference in the principle of the traverse mechanism of a ring spinning frame for spinning filling yarn and one for spinning warp yarn?
- (D). Describe the "elastic top" spinning spindle and outline the principle upon which it depends for its action?
- (E). Describe the twisting and winding action of the spindle, in the mule spinning frame?

What is meant by "the jacking motion;" "twisting at the head;" "backing off;" "carriage gain"?

- No. 5. Find the average counts of yarn to produce a piece of *shade cloth*, weighing 6.15 yards per pound, if the cloth is constructed with 56 ends of warp per inch and 44 picks of filling per inch, and the width of the cloth is 40" on the loom. Allow 8% for take-up in width, and 10% for sizing and take-up in length.

- No. 6. You wish to produce a 40s yarn on spinning frame from a 12.5 oz. lap at the card (using 1" American staple). Lay out the drafts and doublings from spinning frame back to the card, which, in your judgment, will give satisfactory results on the desired counts.

Indicate the revolutions per minute of the front rollers of each machine to conduce to the best results on the above counts and staple. Also give the hank roving of the product of each machine.

- No. 7. Under how many general heads may all sizing ingredients be classed? Name them? Give an example of each, and state the specific purpose for which each ingredient is used in a size-mixture?

- (B). Give a receipt for a size-mixture, which will give good results on a cloth which is to be bleached?

REGISTER OF STUDENTS.

Postgraduate Students.

NAME.	COUNTY.	NAME.	COUNTY.
J. F. Breazeale	Anderson	A. P. Norris	Greenville
G. W. Hart	Orangeburg	J. N. Walker	Barnwell
J. H. Kinsler	Richland		

Senior Class.

NAME.	COUNTY.	NAME.	COUNTY.
P. H. All	Barnwell	G. F. Klugh	Greenwood
J. W. Anderson	Chester	T. O. Lawton	Hampton
J. W. Blease	Saluda	J. B. Lewis	Mecklenburg, N. C.
T. A. Brookbanks	Charleston	H. M. Mathis	Barnwell
W. A. Burgess	Clarendon	E. M. Matthews	Fairfield
A. A. Butler	Charleston	W. E. McLendon	Darlington
H. L. Cannon	Darlington	W. H. Newell	Anderson
J. E. Cheatham	Abbeville	Q. B. Newman	Chesterfield
W. R. Darlington	Barnwell	E. H. Pickett	Oconee
J. C. Duckworth	Anderson	H. L. Ramsey	Spartanburg
W. N. Fair	Edgefield	R. N. Reeves	Fairfield
R. G. Forsythe	Brevard, N. C.	J. H. Roddey	York
W. C. Forsythe	Brevard, N. C.	J. E. Salley	Orangeburg
T. K. Glenn	Anderson	W. A. Sanders	Chester
W. G. Hill	Abbeville	W. H. Scott	Edgefield
E. T. Hughes	Orangeburg	H. R. Tison	Barnwell
J. C. Kaigler	Lexington		

Junior Class.

NAME.	COUNTY.	NAME.	COUNTY.
W. J. Austin	Abbeville	W. F. Cole	Rockingham, N. C.
W. P. Bamberg	Bamberg	W. W. Coleman	Charleston
G. E. Bamberg	Bamberg	W. B. Cothran	Greenwood
B. H. Barre	Lexington	F. Crawford	Pickens
A. R. Barrett	York	B. C. Cromer	Anderson
C. A. Bellows	Beaufort	F. B. Culp	York
A. O. Bowers	Saluda	E. J. DaCosta	Beaufort
E. B. Boykin	Darlington	F. G. DeSaussure	Charleston
E. Brockman, Jr.	Richland	C. Douthit	Anderson
U. R. Brooks, Jr.	Richland	J. C. Earle	Anderson
J. H. Brown	Oconee	H. M. Franks	Laurens
J. M. Burgess	Clarendon	T. N. Gaines	Greenwood
E. G. Campbell	Charleston	J. E. Gettys	York
H. T. Cantey	Clarendon	F. H. Gibbes	Richland
A. B. Carr	Richland	C. N. Gignilliat	Oconee
W. E. Chapman	Greenville	S. E. Gregory	Lancaster
G. B. Clinkscales	Spartanburg	F. M. Gunby	Orangeburg

NAME.	COUNTY.
G. H. Hardin	Oconee
I. W. Hayne	Greenville
D. G. Humbert	Pickens
J. D. Hunter	Anderson
D. Jennings	Charleston
H. B. Jennings, Jr.	Charleston
F. M. Jordan	Oconee
D. Kohn	Orangeburg
E. J. Larsen	Charleston
F. B. Lawton	Hampton
D. G. Lewis	Oconee
D. S. Lewis	Oconee
H. F. Little	Spartanburg
J. Lynah, Jr.	Savannah, Ga.
J. E. Martin, Jr.	Charleston
H. W. Marvin	Colleton
J. D. Meador	Union
R. H. Middleton	Edgefield
G. F. Mitchell	Charleston
T. H. Munro	Union
L. H. McCullough	Williamsburg
G. T. McGregor	Richland
F. K. Norris	Orangeburg
N. Oliver	Darlington
F. E. Pearman	Anderson
T. R. Phillips	Barnwell
H. T. Poe, Jr.	Greenville

NAME.	COUNTY.
W. T. Prescott	Edgefield
C. L. Reid	York
S. M. Robertson	Pickens
J. M. Rodger	Union
A. D. Royall	Charleston
D. H. Salley	Aiken
C. H. Seigler	Aiken
E. M. Shealey	Richland
M. A. Sitton	Anderson
W. F. Sneed	Charleston
T. B. Spencer	York
J. R. Stephens	Greenwood
S. C. Stewart	Pickens
H. G. Stokes	Hampton
D. A. J. Sullivan	Charleston
W. G. Templeton	Abbeville
J. B. Tinsley	Union
N. D. Walker	Union
S. M. Ward, Jr.	Georgetown
J. B. Watkins	Saluda
E. M. Watson	Saluda
J. C. Werts	Edgefield
J. B. Whitney	Augusta, Ga.
H. A. Wilson	Sumter
R. H. Witherspoon	Anderson
M. E. Zeigler	Orangeburg

Sophomore Class.

NAME.	COUNTY.
N. H. Alford	Marion
E. P. Alford	Florence
G. R. Barksdale	Greenwood
W. H. Barnwell	Sumter
J. T. Beaty	Fairfield
G. Black	Spartanburg
C. E. Boineau	Beaufort
J. L. Bradford	Lexington
F. T. Breazeale	Anderson
C. M. Cain	Berkeley
W. O. Cain, Jr.	Sumter
I. C. Carson	Saluda
J. A. Carson	Saluda
W. M. Carter	Richland
S. J. Chandler	Florence
W. B. Chisholm	Charleston
A. C. Connelley	Charleston

NAME.	COUNTY.
R. B. Croft	Aiken
J. C. Cullum, Jr.	Lexington
J. P. Cummings	Fairfield
F. H. Cunningham	Anderson
J. G. Cunningham	Anderson
L. G. Dye	Chester
D. E. Earle	Pickens
E. D. Ellis	Abbeville
G. O. Epps	Williamsburg
S. W. Epps	Williamsburg
A. W. Evans	Richmond, Va.
E. R. Finger	Spartanburg
S. Ford	Fairfield
J. A. Forsythe	Brevard, N. C.
L. W. Fox	Lexington
B. Freeman	Charleston
R. A. Gandy	Darlington

NAME.	COUNTY.	NAME.	COUNTY.
T. S. Gandy	Darlington	G. W. McSwain	Laurens
B. H. Gardner	Aiken	N. W. Newell	Anderson
W. D. Garrison	Anderson	G. F. Norris	Orangeburg
P. A. George	Marion	S. Paul	Beaufort
J. P. Glenn	Spartanburg	B. F. Pegues	Marlboro
M. A. Grace	Colleton	T. S. Perrin	Abbeville
H. Greene	Sumter	H. R. Pollitzer	Beaufort
A. B. Gregorie	Charleston	J. F. Prioleau	Beaufort
C. B. Hagood	Pickens	P. J. Quattlebaum	Saluda
F. P. Hamilton	Union	J. W. Ready	Saluda
T. R. Hamlin	Charleston	C. Y. Reamer	Richland
R. W. Hanckel	Anderson	F. K. Rhodes	Lancaster
J. E. Harrall	Marlboro	J. T. Robertson, Jr.	Abbeville
E. L. Hartley	Lexington	S. P. Roof	Lexington
T. M. Harvey	Berkeley	D. H. Sadler	York
L. B. Haselden	Marion	H. C. Sahlmann	Charleston
R. B. Haynsworth	Florence	P. N. Shannon	Kershaw
A. W. Hill	Greenville	C. V. Sitton	Anderson
W. A. Holland, Jr.	Anderson	M. P. Smith	Charleston
G. M. Honour	Charleston	T. E. Stanley	Marion
J. O. Hughes	Orangeburg	L. E. Stoppelbein	Charleston
M. N. Hunter	Anderson	J. H. Stribling	Oconee
S. Jefferies, Jr.	Cherokee	W. B. Stringfellow	Chester
B. M. Jenkins	Barnwell	H. C. Summers	Newberry
P. F. Jenkins	Greenville	D. S. Taylor	Anderson
T. Jordan	Fairfield	A. E. Thomas	Chester
B. H. Kaigler	Lexington	H. C. Tillman	Edgefield
L. O. King	Anderson	I. L. Tobin, Jr.	Barnwell
J. F. Lanham	Clarendon	F. E. Tyler	Aiken
C. A. Larsen	Charleston	P. T. Villipigue	Kershaw
B. H. Lawrence	Darlington	J. M. Wallace	Union
C. W. Legerton	Charleston	J. LaB. Ward	Georgetown
G. D. Levy	Sumter	E. B. C. Watts	Laurens
V. Livingston	Marlboro	W. M. Wightman	Orangeburg
P. Mackey	Lancaster	H. E. Wills	Spartanburg
F. D. Marjenhoff	Charleston	V. M. Williams	Greenville
J. V. Matthews	Bamberg	J. M. Wilson	Mecklenburg, N. C.
W. B. Mays	Greenwood	O. B. Wilson	York
A. J. Milling	Greenwood	J. Wingo	Spartanburg
O. P. Mills	Greenville	J. H. Woodward	Barnwell
M. M. Mitchell	Aiken	C. W. Wright	Laurens
G. L. Morrison	Pioneer Mills, N. C.	J. C. Wylie	Chester
H. N. McCrary	Anderson	J. H. Wyse	Richland
J. W. McMakin	Spartanburg	T. B. Young	Florence
J. T. McNeill	Sumter	T. H. Zimmerman	Orangeburg

Freshman Class.

NAME.	COUNTY.	NAME.	COUNTY.
C. Ancrum	Kershaw	A. R. Fitzsimmons	Charleston
H. F. Bamberg	Bamberg	D. B. Fletcher	Marlboro
J. G. Barnwell	Sumter	H. R. Fletcher	Marlboro
H. W. Barre	Lexington	J. R. Fulmer	Lexington
L. H. Bell	Darlington	J. Gelzer, Jr.	York
J. N. Bethea	Marlboro	M. R. Gibson	Marlboro
M. B. Booth	Sumter	J. C. Goodman	Oconee
E. H. Bowen	Kershaw	B. B. Gossett	Anderson
J. W. Bowman	Orangeburg	J. A. Gray	Barnwell
M. B. Brabham	Barnwell	V. B. Hall	York
J. O. Breeden	Marlboro	F. T. Hamlin	Anderson
R. H. Breese	Brevard, N. C.	C. Hanvey	Abbeville
E. F. Brown	Anderson	R. B. Hartzog	Bamberg
S. G. Bryan	Williamsburg	J. R. Henderson	Laurens
W. Cagle	Greenville	A. M. Henry	Abbeville
J. R. Carrigan	Darlington	H. C. Hightower	Bamberg
L. E. Carter	Charleston	S. T. Hill	Abbeville
W. Chavous	Barnwell	J. M. Hill	Bamberg
H. F. Cheatham	Abbeville	A. E. Holman	Orangeburg
R. J. Coney	Dorchester	H. F. Hunsucker	Marlboro
J. R. Connor	Berkeley	H. H. Kearse	Bamberg
W. C. Cooley	Anderson	B. V. Kearse	Bamberg
F. E. Cope	Orangeburg	L. H. King	Charleston
J. R. Cothran	Greenwood	J. J. A. Krentzlin	Richland
L. E. Croft	Aiken	F. W. Lachicotte	Georgetown
E. P. Crouch	Charleston	B. F. Lee	Anderson
W. F. Crowther	Abbeville	J. A. Lofton	Charleston
J. T. Davenport	Greenville	J. R. London	York
D. P. Dehon	Dorchester	J. A. Long	Abbeville
C. Dew	Greenwood	T. M. Lundy	Horry
R. T. Dial	Richland	C. L. Major	Greenwood
D. M. Dixon	Fairfield	H. M. Manigault	Dorchester
W. H. Donly	Lexington	H. W. Matthews	Bamberg
J. A. Drake	Marlboro	W. F. Mauldin	Pickens
J. N. Drake	Marlboro	J. Maxwell	Anderson
J. C. DuBoise	Colleton	J. M. Monroe	Marion
B. B. Easterling	Barnwell	H. A. Mood	Sumter
I. F. Eldredge	Kershaw	B. A. Moore	Chesterfield
J. H. Emery	Beaufort	I. H. Morehead	Greenville
H. H. Evans	Sumter	H. A. Moorer	Dorchester
S. E. Evans	Abbeville	E. H. Muller	Charleston
J. W. Everett	Marlboro	C. H. McCay	Berkeley
S. J. Faris	York	F. B. McCoy	Charleston
S. I. Felder	Orangeburg	R. I. McDavid	Greenville
A. L. Fisher	Abbeville	C. B. McFadden	York

NAME.	COUNTY.	NAME.	COUNTY.
Geo. T. McGregor	Richland	J. R. S. Siau, Jr.	Georgetown
G. W. McIver	Charleston	F. P. Sloan	Greenville
W. M. McWhorter	Anderson	W. B. Sparkman	Georgetown
C. Norton	Horry	M. E. Springs	Georgetown
S. O. O'Bryan	Williamsburg	G. A. Steadman	Bamberg
J. F. Odell	Beaufort	H. E. Stradley	Greenville
J. J. O'Hagan	Charleston	S. L. Stribling	Oconee
K. T. Oswald	Lexington	A. J. Stubbs	Marlboro
H. E. Phillips	Barnwell	J. P. Tarbox	Georgetown
V. C. Platt	Berkeley	W. L. Templeton	Abbeville
J. C. Porter	Orangeburg	E. A. Thornwell	York
G. L. Preacher	Barnwell	J. B. Traynham	Greenville
H. A. Preacher	Hampton	W. O. Van Wyck	Anderson
R. Ramseur	Greenville	S. L. Verner	Oconee
J. T. Reese	Edgefield	W. P. Walker	Barnwell
M. S. Reeves	Charleston	W. D. Wall	Greenville
O. M. Roberts	Greenwood	W. B. Watson	Greenville
T. C. Robinson, Jr.	Pickens	W. S. Werts	Edgefield
J. C. Sanders	Colleton	H. S. White	Berkeley
R. V. Sawyer	Aiken	B. L. White, Jr.	Charleston
C. R. Scarborough	Horry	J. A. Wier	Greenwood
J. E. Schachte	Charleston	J. F. Williams	Pickens
J. M. Schorb	York	J. H. Williams	Greenville
W. O. Self	Edgefield	C. E. Williamson	York
H. R. Sherard	Anderson	F. C. Wyse	Richland

Subfreshman Class.

NAME.	COUNTY.	NAME.	COUNTY.
R. L. Adams	Marlboro	K. D. Crowther	Abbeville
F. G. Auld	Richland	F. R. Dingle	Clarendon
G. P. Ballenger	Oconee	C. T. Dingle	Clarendon
C. Beeks	Laurens	W. V. Dunn	Georgetown
T. A. Bowen	Pickens	W. F. DuPre	Oconee
F. K. Breazeale	Anderson	W. R. Earle	Anderson
F. L. Brown	Spartanburg	H. S. Farley	Spartanburg
W. E. Burriss	Anderson	Z. E. Ferrell	Williamsburg
C. V. Carter	Lancaster	F. H. Finklea	Florence
J. Chappell	Richland	L. M. Gray	Greenville
F. W. Clement	Charleston	R. M. Griffin	Richland
C. A. Clinkscales	Abbeville	M. F. Hay	Barnwell
W. A. Coleman	Charleston	C. L. Hicks	Union
A. C. Collins	Spartanburg	W. H. Homesley	Cleveland, N. C.
L. S. Connor	Orangeburg	R. A. Houston	Gonzales, Tex.
W. D. Connor	Orangeburg	T. B. Jacobs	Lexington
J. L. Coogan	Charleston	J. M. Jenkins	Colleton
E. S. Croft	Aiken	W. C. Johnston	Spartanburg

NAME.	COUNTY.	NAME.	COUNTY.
M. F. Kennedy	Charleston	S. F. Seagle	York
A. W. Knobeloch	Charleston	C. C. Schirmer	Charleston
H. G. Lewis	Oconee	J. L. Shaw	Barnwell
R. L. Link	Abbeville	T. M. Shaw	Laurens
T. L. Lofton	Charleston	A. McL. Shealey	Saluda
J. O. Meriwether	Hampton	A. L. Smith	Hampton
M. W. Moore	Marlboro	G. Speer	Abbeville
S. Murray	Richland	E. G. Strobel	Colleton
S. M. McCall	Florence	F. M. Stubbs	Marlboro
C. E. McCown	Florence	A. J. Sullivan	Laurens
F. G. McCrary	Laurens	B. L. Swygert	Lexington
H. H. McGee	Anderson	N. Wakefield	Abbeville
J. C. McLeod	Marlboro	S. A. Wakefield	Abbeville
J. L. Napier, Jr.	Marlboro	L. W. Walker	Clarendon
G. A. Rankin	Anderson	E. W. Watson	Abbeville
B. K. Reeves	Charleston	C. Webb	Laurens
J. W. Rhode	Bamberg	W. C. Wilbur	Charleston
J. H. Richardson	Anderson	A. M. Williams	Charleston
S. P. Richardson	Charleston	E. Wilson	Laurens
J. O. Ritter	Bamberg	H. Zeigler	Orangeburg
J. H. Rodger	Union	J. A. Zimmerman	Oconee
G. W. Royster	Spartanburg	J. C. Zimmerman	Spartanburg
F. M. Routh	Oconee	W. S. Zimmerman	Spartanburg

Irregular Students.

NAME.	COUNTY.	NAME.	COUNTY.
H. R. Dwight	Berkeley	W. M. Quattlebaum	Fairfield
W. F. Gilbert	Spartanburg	T. C. Shaw	Abbeville
J. E. Hopkins	Oconee	W. G. Simms	Barnwell
W. E. Hopkins	Oconee	J. H. Spencer	York
J. D. Hughey	Greenwood	E. E. Smith	Charleston
J. F. Lanham	Clarendon	H. B. Wilkes	Marion

SUMMARIES.

By Classes.

Postgraduates	5	Freshmen	140
Seniors	33	Subfreshmen	82
Juniors	87	Irregular Students	12
Sophomores	124		

Average age of Students 18 years, 7 months, 4 days.

By States.

South Carolina	470	Texas	1
North Carolina	9		
Georgia	2	Total	483
Virginia	1		

By Counties in South Carolina.

NAME.	COUNTY.	NAME.	COUNTY.
Abbeville	25	Hampton	6
Aiken	8	Horry	3
Anderson	39	Kershaw	5
Bamberg	13	Lancaster	4
Barnwell	19	Laurens	11
Beaufort	8	Lexington	14
Berkeley	7	Marion	6
Charleston	49	Marlboro	18
Chester	6	Newberry	1
Chesterfield	2	Oconee	18
Cherokee	1	Orangeburg	19
Clarendon	7	Pickens	10
Colleton	6	Richland	18
Darlington	9	Saluda	10
Dorchester	4	Spartanburg	16
Edgefield	9	Sumter	10
Fairfield	8	Union	9
Florence	7	Williamsburg	6
Georgetown	8	York	18
Greenville	20		
Greenwood	13	Total, South Carolina	470

Church Affiliation.

	PR. CT.		PR. CT.
Baptist	136 28.1	Christian	2 .42
Methodist	124 25.2	Israelite	3 .62
Presbyterian	88 18.2	Unitarian	1 .21
Episcopalian	75 15.7	Universalist	1 .21
Lutheran	17 3.6	No Church preference .	20 4.14
Catholic	10 2.1		
A. R. Presbyterian	7 1.5	Total	483

Occupation of Parents.

	PR. CT.		PR. CT.
Farmers	246 51	Bankers	6 1.2
Merchants	44 9.1	Teachers	6 1.2
Officers	18 3.7	Ministers	5 1.0
Physicians	16 3.3	Engineers	5 1.0
Lawyers	14 3.1	Dispensers	4 .8
Cotton Mill Men	13 2.7	Lumber Dealers	2 .4
Manufacturers	8 1.7	Machinists	4 .8
Insurance Agents	6 1.2	Drummers	4 .8
Bookkeepers	6 1.2	Dentist	1 .2
Clerks	6 1.2	Miscellaneous	58 12.0
Hotel Keepers	6 1.2		
Contractors	6 1.2	Total	483

SECTION MARCHERS.

SECOND TERM.

2	E.	Senior	Q. B. Newman and J. E. Salley.
4	E.	Senior	J. B. Lewis and J. W. Blease.
1	A.	Senior	G. F. Klugh and E. T. Hughes.
1	B.	Senior	W. E. McLendon and R. N. Reeves.
	T.	Senior	W. H. Scott and W. N. Fair.
	C.	Senior	W. A. Burgess and J. G. Kaigler.
1	A.	Junior	L. H. McCullough and J. M. Burgess.
1	B.	Junior	F. K. Norris and M. E. Zeigler.
	C.	Junior	C. L. Reid and H. T. Cantey.
2	T.	Junior	W. B. Cothran and J. E. Gettys.
4	T.	Junior	D. Kohn and T. B. Spencer.
2	E.	Junior	B. H. Barre and A. B. Carr.
4	E.	Junior	F. M. Gunby and T. M. Jordan.
6	E.	Junior	S. C. Stewart and H. G. Stokes.
1	A.	Sophomore	G. O. Epps and S. W. Epps.
1	B.	Sophomore	T. B. Young and A. E. Thomas.
2	A.	Sophomore	G. B. Black and J. L. Bradford.
2	B.	Sophomore	T. S. Gandy and L. W. Fox.
4	A.	Sophomore	T. M. Harvey and W. A. Holland.
4	B.	Sophomore	G. F. Norris and C. W. Legerton.
6	A.	Sophomore	J. T. Robertson and J. F. Prioleau.
6	B.	Sophomore	H. C. Tillman and J. C. Wylie.
1	A.	Freshman	H. W. Barre and L. H. Bell.
1	B.	Freshman	J. R. Connor and W. H. Donly.
2	A.	Freshman	H. H. Evans and V. B. Hall.
2	B.	Freshman	F. T. Hamlin and B. F. Lee.
3	A.	Freshman	J. Maxwell and Geo. T. McGregor.
3	B.	Freshman	C. Norton and O. M. Roberts.
4	A.	Freshman	J. P. Tarbox and W. O. Self.
4	B.	Freshman	F. C. Wyse and W. L. Templeton.
1		Sub-Freshman	H. H. McGee.
2		Sub-Freshman	A. M. Williams.

REGIMENTAL ORGANIZATION--JUNE, 1900.

For instruction in infantry tactics and military police and discipline, the cadets are organized into a regiment of two battalions of three companies each, under the Commandant of Cadets, each battalion being commanded by an instructor of the College detailed for this duty.

The officers and non-commissioned officers are selected from those cadets who have been most studious, soldier-like in the performance of their duties, and most exemplary in their general deportment. In general, the officers are taken from the Senior class, the sergeants from the Junior class, the corporals from the Sophomore class. The figures indicate relative rank.

COMMANDANT OF CADETS.

COL. G. SHANKLIN.

COMMISSIONED STAFF.

P. H. ALL.....Lieutenant and Adjutant
Q. B. NEWMAN.....Lieutenant and Quartermaster

NON-COMMISSIONED STAFF.

H. G. STOKES.....Sergeant-Major
F. K. NORRIS.....Quartermaster-Sergeant

FIRST BATTALION—MAJOR S. M. MARTIN.

*Company A.**Company B.**Company C.**Captains.*J. C. DUCKWORTH.²E. T. HUGHES.⁴J. E. SALLEY.¹*Lieutenants.*H. M. MATHIS.⁸E. H. PICKETT.¹W. E. McLENDON.³*First Sergeants.*B. H. BARRE.³G. T. MCGREGOR.¹A. B. CARR.⁶*Sergeants.*J. B. WHITNEY.²J. B. WATKINS.¹³D. H. SALLEY.⁴E. M. WATSON.⁵S. M. WARD.¹⁷D. KOHN.⁷C. N. GIGNILLIAT.¹⁰C. L. REID.¹⁸L. H. McCULLOUGH.¹⁶S. M. ROBERTSON.¹⁵J. H. BROWN.²¹J. E. MARTIN.²⁰*Corporals.*T. S. PERRIN.¹T. S. GANDY.²J. P. GLENN.³J. A. CARSON.⁶T. B. YOUNG.¹⁰C. W. LEGERTON.⁷T. E. STANLEY.¹¹A. E. THOMAS.¹²V. LIVINGSTON.¹⁴J. C. WYLIE.²²T. J. QUATTLEBAUM.¹⁷T. M. HARVEY.²⁰D. H. SADLER.²⁴C. B. HAGOOD.²⁵G. L. MORRISON.²⁶

SECOND BATTALION—MAJ. E. P. EARLE.

<i>Company D.</i>	<i>Company E.</i>	<i>Company F.</i>
	<i>Captains.</i>	
W. H. SCOTT. ⁷	T. O. LAWTON. ³	G. F. KLUGH. ⁷
	<i>Lieutenants.</i>	
E. M. MATTHEWS. ⁴	J. W. BLEASE. ⁵	J. E. CHEATHAM. ⁷
	<i>First Sergeants.</i>	
T. R. PHILLIPS. ⁵	H. A. WILSON. ²	J. H. SPENCER. ⁴
	<i>Sergeants.</i>	
S. C. STEWART. ¹²	W. E. CHAPMAN. ³	F. E. PEARMAN. ¹
W. B. COTHRAN. ¹⁴	F. M. JORDAN. ¹¹	F. M. GUNBY. ⁶
E. J. LARSEN. ²²	J. E. GETTYS. ¹⁹	T. B. SPENCER. ⁹
	<i>Corporals.</i>	
W. H. BARNWELL. ⁹	J. P. CUMMINGS. ⁴	G. BLACK. ⁵
L. O. KING. ¹³	R. A. GANDY. ⁸	G. A. LARSEN. ²⁹
C. Y. REAMER. ¹⁸	S. W. EPPS. ¹⁵	G. O. EPPS. ¹⁶
G. D. LEVY. ²³	J. L. BRADFORD. ²¹	H. C. TILLMAN. ¹⁹
S. FORD. ³⁰	W. O. CAIN. ²⁸	L. W. FOX. ²⁷

ARTILLERY DETACHMENT.

<i>Captain,</i>
R. G. FORSYTHE. ⁵
<i>Lieutenant,</i>
J. H. RODDEY. ²
<i>Sergeant,</i>
D. A. J. SULLIVAN. ⁸

LIST OF GRADUATES OF CLEMSON COLLEGE.

Agricultural Graduates.

CLASS OF 1896.

Blain, J. M.	Blackstock, S. C.
Boulware, G. P.	Newberry, S. C.
Breazeale, J. F.	Baltimore, Md.
Folk, J. F.	Briggs, S. C.
Furman, C. M.	Philadelphia, Pa.
Gooding, P. H.	Crockettsville, S. C.
Hamilton, R. G.	Santuc, S. C.
Moore, J. H.	Waterloo, S. C.
Moorman, T. S.	Columbia, S. C.
Robertson, B. F.	Clemson College, S. C.
Sloan, B. F.	Clemson College, S. C.
Tillman, B. R., Jr.	Trenton, S. C.
Tompkins, F. G.	Columbia, S. C.
Turnipseed, B. R.	Pleasant, S. C.
Werts, L. A.	Belton, S. C.

CLASS OF 1898.

Brown, D. O.	Anderson, S. C.
Bryan, A. B.	Allendale, S. C.
Garris, J. S.	Spartanburg, S. C.
Gentry, C. W.	Spartanburg, S. C.
Hallum, R. T.	Liberty, S. C.
Hanvey, G. A., Jr.,	Richmond, Va.
Hanvey, J. T.	Norfolk, Va.
Henry, D. H.	Clemson College, S. C.
McFadden, W. H.	Rock Hill, S. C.
Minus, J. P., Jr.,	Kansas City, Mo.
Moore, P. W.	Simpsonville, S. C.
Sarratt, W. J.	Gaffney, S. C.
Smith, J. B.	Viola, S. C.
Spencer, R. L.	Roddey, S. C.
Wiggins, G.	Holly Hill, S. C.

CLASS OF 1899.

McLendon, R.	Charleston, S. C.
Shealey, A. S.	Ames, Ia.
Smith, H. G.	Clemson College, S. C.
Taylor, I. B.	Greenwood, S. C.
Thomson, J. C.	Washington, D. C.
Walker, W. F.	Allendale, S. C.

CLASS OF 1900.

All, John E.	Allendale, S. C.
Ayer, L. W.	Rockingham, N. C.

Gray, H. K.	Greenville, S. C.
Kennedy, J. L.	Laurens, S. C.
Kinsler, J. H.	Lever, S. C.
Lawton, F. A.	Baltimore, Md.
Mauldin, C. E.	Newton, Ala.
Mauldin, L. O.	Atlanta, Ga.
Norris, A. P.	Clemson College, S. C.
Rawl, B. H.	Cateechee, S. C.
Walker, J. N.	Appleton, S. C.
Wells, C. H.	Wells P. O., S. C.

Mechanical Graduates.

CLASS OF 1896.

Aull, B. M.	Autun, S. C.
Bowen, J. T.	Easley, S. C.
Bradley, J. T.	Hunters, S. C.
Bryant, F. L.	Newport News, Va.
Calhoun, P. N.	Washington, D. C.
Carpenter, W. H.	West Point, N. Y.
Chreitzberg, A. M.	Pinner's Point, Va.
Cothran, T. W.	Portsmouth, Va.
Dowling, D.	Bamberg, S. C.
Earle, E. P.	Clemson College, S. C.
Hart, G. W.	Charlotte, N. C.
Hunter, J. E.	St. Luke's, S. C.
Klugh, W. W.	Clemson College, S. C.
Langley, P. G.	Schenectady, N. Y.
Lee, R. E.	Clemson College, S. C.
Mauldin, I. M.	Pickens, S. C.
Pegues, O. M.	Kollock's, S. C.
Sease, L. A.	Prosperity, S. C.
Simpson, J. G.	Darlington, S. C.
Tindal, A. J.	Felder, S. C.
Tuten, T. H.	Crockettsville, S. C.
Wardlaw, W. W.	Sandover, S. C.

CLASS OF 1898.

Hook, J. H.	Clemson College, S. C.
McCrary, J. A.	Washington, D. C.
Mahaffey, C. B.	Schenectady, N. Y.
Maxwell, J. D.	Atlanta, Ga.
Rogers, D. F.	Battle Creek, Pa.
Swygert, G. H.	Washington, D. C.
Talbert, A. D.	Washington, D. C.
Vogel, T. R.	Port Royal, S. C.
Walker, T. J.	Denmark, S. C.
Wise, J. T.	Aiken, S. C.

CLASS OF 1899.

Calhoun, J. S.	Port Royal, S. C.
Cheitzberg, C. K.	Rock Hill, S. C.
Elder, M. L.	Schenectady, N. Y.
Hook, W. N.	Darlington, S. C.
Jeffares, J. W.	Feasterville, S. C.
Lewis, J. E.	Schenectady, N. Y.
Mathis, A. J.	Schenectady, N. Y.
Stribling, J. H.	Miller School, Va.
Turner, T. H.	Schenectady, N. Y.
Turnipseed, L. A.	Port Royal, S. C.

CLASS OF 1900.

Adams, W. G.	Rock Hill, S. C.
Cannon, R. S.	Anderson, S. C.
Caughman, J. E.	Washington, D. C.
Dodd, H. B.	Ford, Ga.
Epps, H. G.	Kingstree, S. C.
Fletcher, B. A.	Judson, S. C.
Gray, J. J. Jr.,	Stillwood, S. C.
George, W. D.	Anderson, S. C.
Lewis, G. P.	Clemson College, S. C.
Liles, S. E.	McColl, S. C.
Riggs, A. F.	Orangeburg, S. C.
Sullivan, J. F.	Washington, D. C.

Textile Graduates.

CLASS OF 1900.

Clinkscates, L. D.	Spartanburg, S. C.
Donaldson, J. R.	Parnassus, S. C.
Pearman, S. D.	Washington, D. C.
Sloan, S. M.	Greenville, S. C.

SOUTH CAROLINA EXPERIMENT STATION.

Board of Fertilizer Control.

HON. J. E. TENDAL, HON. J. E. WANNAMAKER, HON. A. T. SMYTHE,
J. P. SMITH, Secretary.

Officers of Experiment Station.

HENRY S. HARTZOG, President of College... ..Director
J. S. NEWMAN... ..Vice-Director and Agriculturist
M. B. HARDIN... ..Chief Chemist
F. S. SHIVER, Ph. G... ..Assistant Chemist
C. C. NEWMAN... ..Horticulturist
R. N. BRACKETT, Ph. D... ..Assistant Chemist
G. E. NESOM, B. Sc., D. V. M... ..Veterinarian
*C. C. McDONNELL, B. S... ..Assistant Chemist
P. H. ROLFS, M. Sc.,... ..Botanist
*B. F. ROBERTSON, B. S... ..Assistant Chemist
C. M. CONNER, B. S... ..Assistant Agriculturist
A. P. ANDERSON, Ph. D... ..Entomologist
D. H. HENRY, B. S... ..Assistant Entomologist
O. M. WATSON... ..Poultryman
J. S. PICKETT... ..Experiment Station Foreman
JOHN N. HOOK, Secretary and Librarian.

* Engaged in fertilizer analysis.

Extracts from the act of Congress, known as the "Hatch Act," approved March 2, 1887, for the establishment of Agricultural Experiment Stations in connection with Colleges established in the several States under the provisions of the Congressional Act, approved July 2, 1862, and known as the first "Morrill bill."

SECTION I. * * * That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on the subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of the college or colleges, or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July 2, 1862, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and mechanic arts," or any of the supplements to said act, a department to be known and designated as an "Agricultural Experiment Station."

* * *

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with

the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. * * * It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures. * * *

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore described, the sum of \$15,000 per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of Section 8 of this act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the Treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887: *Provided, however,* That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement or repair of a building or buildings necessary for carrying on the work of such station, and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

* * * * *

SEC. 7. That nothing in this act shall be construed to impair or modify the legal relation existing between any of said colleges and the government of the States or Territories in which they are respectively located:

SEC. 8. * * * And in case any State shall have established under the provisions of said act of July 2 aforesaid an agricultural department or experiment station in connection with any university, college or institution not

distinctively an agricultural college or school, and such State shall have established or shall hereafter establish a separate agricultural college or school, which shall have connected therewith an experimental farm or station, the Legislature of such State may apply, in whole or in part, the appropriation by this act made to such separate agricultural college or school, and no Legislature shall by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of money authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grant: *Provided*, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of its Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this act shall be held or construed as binding the United States to continue any payments from the treasury to any or all the States or institutions mentioned in this act, but Congress may at any time amend, suspend or repeal any or all the provisions of this act.

General Statement.

The work of the Experiment Station is classified under two general departments: The Chemical and the Agricultural.

The Agricultural is sub-divided into the following divisions: the agricultural division, the horticultural, the dairy, the veterinary, the botanical, the entomological, and the poultry division. The work of this Experiment Station during the past year included investigations of the chemical composition of various rice products; the inspection and analysis of commercial fertilizers, and the analysis of waters, phosphate rocks, ores, minerals, marls, clays and sand;—variety, fertilizer, rotation and cultural experiments; plant breeding, especially cotton and corn; studies of forage plants for hay and pasturage; cotton boll rot and other plant diseases; diseases of animals, tuberculosis, Texas fever, and glanders; comparisons of soiling and pasturage; experiments in feeding pigs, and in pasteurizing milk; entomology, insects injurious to the cotton plant; and in horticulture, experiments in the repression of injurious insects and fungi, studies of frost resisting varieties of fruits, methods of pruning grape vines, and forcing fruits and vegetables.

This Station has recently been provided with an expert poultryman, and investigations will now be directed in such lines that will develop the greatest practical benefit to our people, showing the best breeds for all the various purposes of poultry raising, the advantages of cross-breeding, the utility and value of capons, and stimulating such interest in, and attention to, the possibilities of this profitable industry as its importance demands.

PUBLICATIONS OF THE SOUTH CAROLINA EXPERIMENT STATION.

(Numbers marked thus * are exhausted.)

Bulletins of the Station are sent free to all citizens of the State requesting them.

Old Series.

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|------|---|--|
| 1886 | { | Report of Experiment Farm. |
| 1888 | | |
| 1888 | { | No. 1. *Tests of varieties of cotton. |
| | | No. 2. *Tests of commercial seeds. |
| | | No. 3. *Analyses of fertilizers and feeding-stuffs. |
| | | *Annual report. |
| 1889 | { | No. 4. *Entomology. |
| | | No. 5. *Oats and wheat. |
| | | No. 6. Hog cholera. |
| | | No. 7. Meteorology. |
| 1890 | { | No. 8. Chemical statistics of corn crop in South Carolina. |
| | | Maize fodder ensilage; cow peas as a forage crop. |
| | | Composition of soja bean vines. |
| | | Annual report. |

New Series.

- | | | |
|------|---|--|
| 1891 | { | No. 1. *Analyses of commercial fertilizers, Part 1. |
| | | No. 2. *Cotton experiments with varieties and fertilizers. |
| | | No. 3. *Analyses commercial fertilizers, Part 2. |
| | | No. 4. Fertilizer tests with wheat. |
| | | Annual report. |
| 1892 | { | No. 5. Methods of keeping sweet potatoes. |
| | | No. 6. Analyses of commercial fertilizers. |
| | | No. 7. Experiments with wheat and oats. |
| | | Annual report. |
| 1893 | { | No. 8. Investigation chemical composition cottonseed meal. |
| | | No. 9. Experiments with Irish potatoes. |
| | | No. 10. Notes on varieties of beans. |
| | | No. 11. Analyses commercial fertilizers, Part. 1. |
| | | No. 12. Cooperative soil tests of fertilizers. |
| 1894 | { | No. 13. Analyses commercial fertilizers, Part 2. |
| | | No. 14. Experiments with corn. |
| | | Annual report. |
| | | No. 15. Fertilizer experiments with corn. |
| | | No. 16. Experiments with tomatoes. |
| 1894 | { | No. 17. Analyses commercial fertilizers. |
| | | No. 18. Fertilizer experiments with cotton. |
| | | Annual report. |

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|------|---|----------------|--|
| 1895 | { | No. 19. | Dairying. |
| | | No. 20. | Analyses commercial fertilizers. |
| | | No. 21. | Technical. |
| | | No. 22. | Colic in horses and mules. |
| | | | Annual report. |
| 1896 | { | No. 23. | Lameness in horses. |
| | | No. 24. | Analyses commercial fertilizers, in two parts. |
| | | No. 25. | *Distemper in horses and mules. |
| | | No. 26. | *Founder in horses and red water in cattle. |
| | | No. 27. | *Wounds and their treatment. |
| | | Annual report. | |
| 1897 | { | No. 28. | The sweet potato as a starch-producer. |
| | | No. 29. | Analyses commercial fertilizers. |
| | | No. 30. | Determination of starch in the sweet potato. |
| | | No. 31. | Hog cholera and swine plague. |
| | | No. 32. | Protection and improvement of worn soils. |
| | | Annual report. | |
| 1898 | { | No. 33. | Tests of Dairy methods and apparatus. |
| | | | Comparative tests of butter-fat. |
| | | No. 34. | Sugar beets. |
| | | No. 35. | Analyses commercial fertilizers. |
| | | No. 36. | Diseases of plants. |
| | | No. 37. | Wheat. |
| 1899 | { | No. 38. | Asparagus rust in South Carolina. |
| | | No. 39. | Suggestions to auxiliary clubs. |
| | | No. 40. | Farm manures for cotton. |
| | | No. 41. | Rice blast and a new rice smut. |
| | | No. 42. | Varieties of cotton. |
| | | No. 43. | Analyses of commercial fertilizers. |
| | | No. 44. | Corn. |
| | | No. 45. | Analyses of commercial fertilizers. |
| | | No. 46. | Cotton. |
| | | No. 47. | A chemical study of the Sea Island cotton plant. |
| | | No. 48. | Broad and narrow tires. |
| 1900 | { | No. 49. | Strawberries. |
| | | No. 50. | Tuberculosis of cattle. |
| | | No. 51. | Silo construction and silage. |
| | | No. 52. | Pig feeding. |
| | | No. 53. | Analyses of commercial fertilizers. |
| | | No. 54. | Analyses of commercial fertilizers, Part II. |
| | | No. 55. | Feeding rice meal to pigs. |
| | | No. 56. | Wheat. |
| | | No. 57. | Fungicides. |

- 1901 { No. 58. Grapes.
No. 59. Chemical investigation of the rice plant and of the products
and by-products of the rice industry.
No. 60. Analyses of commercial fertilizers.
No. 61. Corn.
No. 62. Capons and caponizing.
No. 63. Chemical investigation of sweet potatoes.
No. 64. Analyses Commercial Fertilizers.
No. 65. San Jose Scale.



FREE ANALYSES, INFORMATION, ETC.

The various departments of the College and Experiment Station will furnish, free of charge, advice and information on any topic pertaining to general agriculture, horticulture, botany, entomology, veterinary science, dairying, stock breeding, feeding, etc.; also analyses of fertilizers, marls, waters and other substances, assays of ores, determination of rocks and minerals, tests of bricks, cements, building stones, illuminating oils, calibration of electrical instruments, etc.

The departments cannot undertake to analyze stomachs or other parts of poisoned animals, make tests for poisons, nor to make bacteriological examinations.

All inquiries and requests should be addressed to the President, giving explicit account of conditions, difficulties, etc., as far as possible, and the matter will be referred promptly to the proper department for further correspondence. Before sending samples of any kind for examination or analysis, it is best to write for instructions, and thus avoid trouble and delay.



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TEXTILE BUILDING



CHEMICAL LABORATORY.



VETERINARY BUILDING



CLASS EXERCISE. ANIMAL INDUSTRY



HORTICULTURAL BUILDING



DAIRY



CAMPUS VIEW



HOSPITAL



SCENE AT CLASS GROUNDS



FORT HILL



PORTRAIT OF JNO. C. CALHOUN IN CHAPEL



CALHOUN MANSION





CLEMSON COLLEGE

OF

SOUTH CAROLINA

AGRICULTURAL, MECHANICAL, TEXTILE

Catalogue 1901-1902

NINTH YEAR



Columbia, S. C.
THE R. L. BRYAN COMPANY
1902

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College Calendar

Session 1902-1903

Session begins Wednesday, September 10, 1902

Second Quarter begins Monday, November 17, 1902

Thanksgiving Day, Thursday, November 27, 1902

Christmas Vacation, one week

Second Term (Third Quarter) begins Wednesday, January 28, 1903

Fourth Quarter begins Friday, April 3, 1903

Session ends, Commencement, June 5-7, 1903

Official Title

THE CLEMSON AGRICULTURAL COLLEGE
OF SOUTH CAROLINA

Postoffice and Telegraph Office: CLEMSON COLLEGE, S. C.

Freight and Express Office: CALHOUN (Southern Ry.), S. C.

Commencement 1902

Program

Friday, June 6th

11 A. M., Address to Graduating Class, SENATOR H. D. MONEY
8.30 P. M., Alumni Address, F. G. TOMPKINS

Saturday, June 7th

11 A. M., Commencement Exercises and Delivery of Diplomas
8.30 P. M., Glee Club Entertainment

Sunday, June 8th

11 A. M., Baccalaureate Sermon, REV. J. WALTER DANIEL, D. D.
8.30 P. M., Farewell Exercises, Y. M. C. A.

Board of Trustees

Life Members

NAME	COUNTY
HON. R. W. SIMPSON, President.....	Anderson
SENATOR B. R. TILLMAN.....	Edgefield
HON. R. E. BOWEN.....	Pickens
HON. D. K. NORRIS.....	Anderson
HON. J. E. BRADLEY.....	Abbeville
HON. M. L. DONALDSON.....	Greenville
HON. J. E. WANNAMAKER.....	Orangeburg

Term Expires 1904

HON. J. E. TINDAL.....	Clarendon
HON. J. S. GARRIS.....	Spartanburg
HON. JESSE H. HARDIN.....	Chester

Term Expires 1902

HON. W. D. EVANS.....	Chesterfield
HON. A. T. SMYTHE.....	Charleston
HON. L. A. SEASE.....	Lexington

P. H. E. SLOAN, Secretary and Treasurer, Clemson College, S. C.

Executive Committee

D. K. NORRIS	J. E. TINDAL	M. L. DONALDSON
R. E. BOWEN		J. E. BRADLEY

Finance Committee

R. W. SIMPSON	A. T. SMYTHE	M. L. DONALDSON
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Board of Visitors 1902-1903

FIRST DISTRICT—Hon. W. G. Hinson, James Island

SECOND DISTRICT—Hon. J. C. Shepard, Edgefield

THIRD DISTRICT—Hon. J. R. Vandiver, Anderson

FOURTH DISTRICT—Hon. D. E. Hydrick, Spartanburg

FIFTH DISTRICT—Hon. J. L. Glenn, Chester

SIXTH DISTRICT—Hon. J. H. Hudson, Bennettsville

SEVENTH DISTRICT—Hon. F. D. Bates, Orangeburg

Faculty

(For 1902-1903)

(In order of seniority.)

HENRY S. HARTZOG, LL. D.,

President

M. B. HARDIN (Virginia Military Institute),

Professor of Chemistry

C. M. FURMAN (A. B., Furman University),

Professor of English

W. S. MORRISON (A. B., Wofford College),

Professor of History

J. V. LEWIS (B. E., Univ. of N. C.; S. B., Harvard; Johns Hopkins),

Professor of Geology

J. S. NEWMAN (University of Virginia),

Professor of Agriculture

J. H. M. BEATY (South Carolina College),

Professor of Textile Industry

P. T. BRODIE (B. S., A. B., Furman University),

Professor of Mathematics

W. M. RIGGS (E. M. E., Alabama Polytech. Inst.),

Professor of Electrical Engineering

.....

Commandant and Professor of Military Tactics

R. N. BRACKETT (A. B., Davidson College; Ph. D., Johns Hopkins),

Assistant Professor of Chemistry

A. M. REDFEARN (B. S., Wake Forest College; M. D., L. I. College Hospital),

Instructor in Physiology

F. S. SHIVER (Ph. G., University of South Carolina),

Instructor in Agricultural Analysis

ALBERT BARNES (M. M. E., Cornell),

Assistant Professor of Mechanical Engineering

J. S. McLUCAS (A. B., South Carolina College; A. B., A. M., Harvard),

Assistant Professor of English

C. M. CONNER (B. Agr., Univ. of Missouri; B. S., Mich. Agr. College),

Assistant Professor of Agriculture

- T. G. POATS (Miller School, Virginia; University of Virginia),
Instructor in Physics
- G. E. NESOM (B. Sc., Mississippi Agricultural and Mechanical College; D. V. M., Iowa State Veterinary College),
Instructor in Veterinary Science
- F. D. FRISSELL (Philadelphia Textile School),
Instructor in Weaving and Designing
- WILLS JOHNSON (Miller School, Virginia),
Instructor in Forge and Foundry
- C. B. WALLER (A. M., Wofford College; Vanderbilt University),
Assistant Professor of Mathematics
- J. WISTAR DANIEL (A. B., Wofford College; M. A., Vanderbilt Univ.),
Assistant Professor of English
- C. C. NEWMAN (Clemson College),
Instructor in Horticulture
- R. E. LEE (B. S., Clemson College),
Instructor in Drawing
- S. C. WRIGHT (B. S., Georgia School of Technology),
Instructor in Machine Shop
- L. C. RAIFORD (Ph. G., Md. Col. of Pharmacy; Ph. B., Brown Univ.),
Instructor in Dyeing
- SAMUEL MANER MARTIN (S. C. Military Academy),
Assistant Professor of Mathematics
- S. W. REAVES (S. C. Military Academy; B. S., University of N. C.; A. B., Cornell),
Assistant Professor of Mathematics
- H. H. KYSER (B. S., S. M. E., Alabama Polytech. Inst.),
Assistant Professor of Electricity
- J. H. HOOK (B. S., Clemson College),
Instructor in Woodwork
- CHAS. E. CHAMBLISS (B. S., M. Sc. Univ. of Tenn.),
Instructor in Zoology and Entomology
- C. O. UPTON (B. Agr., Cornell),
Instructor in Dairying and Animal Husbandry
- HAVEN METCALF (A. M., Brown Univ.; Univ. of Nebraska),
Instructor in Botany and Bacteriology
- G. SHANKLIN (South Carolina Military Academy),
Registrar and Assistant in Mathematics
- W. W. KLUGH (B. S. Clemson College),
Assistant Instructor in Drawing

T. W. KEITT (Virginia Military Institute),

Assistant in Freshman and Subfreshman Classes

A. B. BRYAN (B. S., Clemson College; B. Lit., Univ. of Nashville),

Assistant in English

JOHN W. GANTT (Miller School, Va.),

Assistant Instructor in Woodwork

D. H. HENRY (B. S., Clemson College),

Assistant in Chemistry

B. M. PARKER (B. S., N. C. A. & M. Col.; Lowell Textile School),

Assistant Instructor in Textile Industry

O. M. WATSON (Furman Univ.),

Instructor in Poultry Industry

M. E. BRADLEY (A. B., Erskine College),

Tutor

J. E. HUNTER (B. S., Clemson College),

Tutor

Board of Health

HENRY HARTZOG

President

DR. A. M. REDFEARN

Surgeon

DR. P. H. E. SLOAN

PROF. M. B. HARDIN

PROF. J. S. NEWMAN

General Information

Origin and Objects

In 1886, a convention of the farmers of South Carolina passed a resolution advocating the establishment of an Agricultural College. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who died in 1888, leaving as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and about \$80,000 in other securities, for the purpose of establishing an Agricultural College.

The Legislature passed an Act which became a law in November, 1889, accepting the bequest. The College opened July 6, 1893, with an enrollment during its first session of 446 students.

The object of the College, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and applications of the sciences bearing upon agriculture and mechanics, and to give the breadth and culture necessary for a rounded education, courses are provided in history, economics and English.

It is considered of the utmost importance that students be taught, not only theoretical methods, but practical work in these methods. To this end, as much time is devoted to laboratory and shop-work, field-instruction and other practical exercises, as to lectures and recitations.

Location

The College is located on the dividing line between Oconee and Pickens Counties, in the picturesque foot-hills of the Blue Ridge. It has an elevation of 900 feet above sea level, and commands an excellent view of the mountains to the north and west, some of which attain an altitude of nearly 5,000 feet. The climate is invigorating and healthful, and the surroundings are in every way favorable to the highest physical and mental development. The buildings are located on the old Fort Hill homestead of John C. Calhoun.

The College is one mile from Calhoun, a station on the main line of the Southern Railway, and two miles from Cherry's, on the Blue Ridge Railroad. By means of these roads and their connections,

the College is easily accessible from all parts of the State. It is also connected by telephone with Calhoun and Pendleton, and thence by telegraph with all parts of the country. The postoffice is conveniently situated on the campus, and receives five daily mails.

College Grounds and Buildings

GROUNDS.—The College grounds occupy about 200 acres of land, including the campus, sites of buildings and residences, and grounds for military drill and outdoor athletics. The campus is laid out in walks, drives and lawns, and is shaded by a beautiful grove of native forest trees.

In memory of the lamented R. T. V. Bowman, late instructor in forge and foundry work, the new athletic and parade grounds have been named "Bowman Field."

AGRICULTURAL HALL is a three-story brick structure, 130x140 feet, trimmed with gray sandstone. It contains twenty-two rooms, including recitation rooms, library and reading room, literary society halls, laboratories for botany, entomology, physics and mineralogy, besides the offices of the President, the Commandant and the Secretary and Treasurer. Adjoining this building is Memorial Hall, the College Chapel, which has a seating capacity of 1,000. It is used for religious purposes and as an assembly room.

THE MECHANICAL BUILDING is a substantial brick structure of liberal dimensions, containing about 30,000 square feet of floor space. On the first floor are the mechanical laboratory, machine shop, forge shop, foundry, and the power and light station. On the second floor are the offices and recitation room, while the wood shop occupies the whole of a two-story wing, 45x100 feet. The third floor is entirely occupied by the division of drawing.

The original CHEMICAL LABORATORY is a two-story brick building, 50x80 feet, covered with slate, and finished inside with Southern pine. Overlapping this at one corner, and connected with it, is a new and somewhat similar building 53x86 feet, of modern style and handsome design. This double building constitutes a commodious structure adequate to all the needs of the department.

THE TEXTILE BUILDING is a two-story brick structure of modern cotton mill design, protected from fire by automatic sprinklers and a 10,000 gallon water tank in the tower. The first floor is occupied by recitation rooms, carding and spinning rooms, and office. On the second floor are the dyeing and weaving departments.

THE ORIGINAL CADET BARRACKS is a three-story brick building, containing 148 rooms for students, a dining hall 134x44 feet, and a kitchen 50x37 feet. The growth of the College has necessitated the erection during the past year of an additional barracks building 199x42 feet, containing 82 rooms. These buildings are heated by steam and lighted by electricity, and have an abundant supply of pure spring water.

The rooms in barracks are furnished with single width iron cots, mattresses, tables, chairs, wardrobes, buckets, pans, cups and mirrors. The dining hall is well supplied with table linen, silverware and china. The kitchen is equipped with modern appliances for culinary purposes.

The bath rooms and closets are located in brick buildings apart from the barracks, and connected with them by covered gangways.

THE ELECTRICAL INSTRUMENT LABORATORY is a brick building of special design. It is arranged especially for delicate instrument work.

THE DYNAMO LABORATORY is a modern brick structure, 37x80 feet. Besides containing the dynamo electric machinery for instructional use, it also contains the electrical engineering lecture room.

THE HORTICULTURAL BUILDING, a two-story frame structure, contains the offices, class rooms and collections of the horticultural division, and the local office of the United States Weather Bureau. There are also a spacious, well-equipped green house, a canning house and a packing house, with brick basement.

THE DAIRY BUILDING is a wooden structure of modern design, constructed especially to illustrate the most approved methods of dairy practice.

THE VETERINARY HOSPITAL is a commodious two-story frame building, 30x48 feet, with a basement 18x30 feet. It contains a dissecting room, drug room, an office, feed rooms, and apartments for an attendant.

THE HOSPITAL, located more than a quarter of a mile from the barracks, is a wooden building, especially designed for the purpose. It is lighted by electricity, and has a thorough sewerage system. The hospital is in the immediate charge of the College Surgeon, who is assisted by an experienced matron and nurse, thus ensuring the best personal attention to each patient.

THE CALHOUN MANSION, the former residence of John C. Cal-

houn, is kept in honor of his memory, in accordance with the provisions of Mr. Clemson's will.

RESIDENCES.—Nine two-story brick buildings, nine six-room cottages, and twenty-one smaller houses furnish residences for professors and other officers of the College.

Four additional five-room cottages are now being built.

CLEMSON CLUB HOTEL.—The College Hotel, a commodious building, overlooking the campus, is operated as a club by some members of the faculty. In addition to furnishing a home for the members of the club, it is open the entire year to a limited number of transients.

THE LAUNDRY is a brick building specially constructed and fitted with the improved machinery of a modern steam laundry. It is operated exclusively for students.

EXPERIMENT STATION OFFICES.—A wooden building, containing offices, a library, and storage and seed rooms, is provided for the use of officers of the Experiment Station.

FARM BUILDINGS.—The College is provided with commodious barns and other farm buildings of modern design, which are described more fully in connection with the equipment for instruction in agriculture.

THE POULTRY YARDS are supplied with incubators, brooders and other modern appliances. There are thirty-six pens, 20x32 feet, each containing a house 6x8 feet. For every four pens there is a run 80x150 feet, all enclosed with poultry cabled wire.

Water Supply

There are two sources from which water is obtained. The general supply is collected from springs through iron pipes into a reservoir, from which it is pumped into a standpipe eighty feet high, whence it is distributed.

Drinking water is pumped from a bold spring, in a continuous stream, directly into the barracks. It is by this means furnished fresh, pure and cold.

The waste water is used for flushing the sewer pipes, which empty into the Seneca River, a half-mile away.

Tuition

The following extract is taken from Section 1120, Revised Stat-

utes of South Carolina, 1893, Volume I., setting forth the powers and duties of the Board of Trustees: "They shall charge each student a tuition fee of forty dollars per annum; * * * indigent students shall not be required to pay said tuition fee."

In accordance with this law, residents of South Carolina are granted free tuition upon presentation of the following certificate, properly signed:

CERTIFICATE OF INABILITY TO PAY TUITION

THIS IS TO CERTIFY, *That I am unable to pay tuition for my.....in the Clemson Agricultural College for the session of 1902-1903.*

.....
Father or Guardian.

I hereby certify that, to the best of my knowledge and belief, the above statement is true.

.....
County Auditor.

All other students pay the tuition fee of \$40.00 per session.

Blank certificates will be furnished upon application to the President.

Expenses for the Session of 1902-1903

For free tuition students.....\$102 42

For tuition paying students..... 142 42

These charges are due and payable in advance on the first day of each quarter, as follows:

September 10, 1902, or on date of entrance:

Incidental fee \$5 00

Medical fee 5 00

Uniform 23 00

Board and washing, first quarter..... 16 88

Breakage fee (see page 16)..... 2 00

Total for free tuition students..... \$51 88

Tuition, first quarter.....\$10 00

Total for tuition paying students..... \$61 88

November 17, 1902:

Board and washing, second quarter.....	\$16 88	
Total for free tuition students.....		\$16 88
Tuition, second quarter.....	\$10 00	
Total for tuition paying students.....		26 88

January 28, 1903:

For free tuition students, third quarter..	16 88
For tuition paying students.....	26 88

April 3, 1903:

For free tuition students, fourth quarter	16 88
For tuition paying students.....	26 88

A deposit of \$2.00 is required of all students upon entrance, according to the following resolution of the Board of Trustees:

Resolved, That at the beginning of a session each student be required to deposit \$2.00 with the Treasurer, to be known as a breakage fee. Whenever the property of the College is damaged, the actual cost of the repair of the property damaged shall be charged to the student who damaged the property. If, however, the responsibility cannot be fastened upon any student, the amount of the damage shall be prorated equally among all the students. At the end of the session any amount to the credit of a student shall be returned to him.

The price of uniforms is subject to fluctuations of the market.

To the above must be added the cost of books and stationery, which may be obtained at the Cadet Exchange at wholesale prices; also \$1.50 for diploma, payable on graduation.

Remittances should be made in cash, money order, or New York Exchange, *not by local checks*, to P. H. E. SLOAN, Treasurer, Clemson College, S. C. Banks charge *exchange on local checks*.

A deduction will be made for board and washing only when a student is absent one month or more.

Uniform

The College uniform is of cadet gray of the West Point pattern, except that the College button is used. For military full dress, the cadet officers wear a plume and sash, and the non-commissioned officers and privates a pompon. This uniform is made of the best Charlottesville mills goods, is neat, and, considering the make and material, is very inexpensive.

Requirements for Admission

Each candidate must be at least sixteen years of age.

Certificates of good moral character are required of all candidates not known to members of the faculty; and if the candidate comes from another college, this certificate must show that he was honorably discharged.

For admission into the Freshman Class thorough proficiency is required in arithmetic, elementary algebra, English grammar, geography and history of the United States. The text-books recommended to those preparing to enter the Freshman Class are Wells' Academic Arithmetic, Wentworth's New School Algebra, Whitney-Lockwood English Grammar, Dryer's or Tarr's Physical Geography, Eggleston's History of the United States and its People.

Applicants who pass satisfactory examinations on all the theoretical subjects completed in the freshman year (see courses of study) may be admitted on probation to the Sophomore Class. Students so admitted must not only keep up with the regular course, but must also, within a reasonable length of time, make up all deficiencies in the practical work of the Freshman course.

All candidates for matriculation are subject to a medical examination, and will be excluded from the College on account of consumption, or other contagious or communicable diseases, or permanent disability for manual labor or military duty.

Each student will be required to bring with him four sheets, two blankets, a comfort, six towels, one pillow and two pillow-cases. Beds are single width.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.

Entrance Examinations

All candidates for admission to the College must take the entrance examinations.

Certificates and diplomas will not be accepted in lieu of these examinations, but candidates are requested to bring them as corroborative evidence of preparation.

On other pages will be found typical examinations for entrance into the Freshman Class. They will be useful in suggesting the character of preparation that an applicant should have.

Regulations of the College

Reports

Monthly reports are furnished to parents and guardians, giving the standing of students in all studies and in discipline. Reports are also issued at the end of each term, showing the grades, based upon class work and examinations, in all studies. Parents will be advised to withdraw students who habitually shirk duties.

No student conditioned on any subject can be promoted to a higher class until all conditions are removed.

Conditioned students are allowed five days from the opening of every session in which to remove deficiencies; and during this period no conditioned student is allowed to attend regular class exercises.

No student is allowed to take the courses of any class more than twice, except by special permission of the faculty.

Any student taking a subject over waives the right to all previous records in that subject, and is placed upon the same footing as students taking the work for the first time.

No student failing of promotion is granted an irregular course that does not include all subjects on which he is conditioned.

All students who are put back into any class must take the full work of that class.

Any student desiring to change his course of study must apply for such change within one month from date of entrance.

Students are not allowed to change from the Agricultural to the Mechanical course and *vice versa* after the beginning of the Sophomore year.

Students making an average of 90 per cent. or more, in each study, for the year, have their names published at commencement as Distinguished.

The students who make the highest average grade during a term are appointed marchers of their respective sections for the succeeding term.

Irregular courses are not allowed to students in the Subfreshman Class.

Absences from recitation, if they exceed twenty per cent. of the class periods in any subject, must be made up within a month.

Practical work must be made up, hour for hour, under the direction of the instructor.

All students are required to purchase the text-books used in their classes, unless excused for special reasons by the instructors. Text-books are kept at the Cadet Exchange and are furnished to students at wholesale prices.

Matriculation is equivalent to a pledge to conform to the rules and regulations of the College.

Rules for the Appointment of Students

In selecting the students who shall be notified to report to the College, the following rules, prescribed by the Board of Trustees, will govern:

1. Students must undergo a medical examination, and no student will be admitted who is not healthy and free from contagious diseases, including consumption.

2. Students will be apportioned among counties in proportion to representation in the House of Representatives, under the following rules and regulations:

(a). Boys prepared to enter College classes will have preference over those who can only enter the Subfreshman class.

(b). As between boys of equal preparation, the oldest will have the preference.

(c). Other things being equal, the first applicants will receive permission to enter.

(d). When a county has not sent its quota, the places thus left shall be apportioned among the other applicants.

(e). Applicants not entering within ten days after the opening of the session will have their rights in the place given to applicants next on the roll.

Military Regulations

In addition to the special regulations of the military department, cadets are subject to the following general regulations:

Cadets are subject to military discipline at all times, and are required to take part in drill, guard duty and other military exercises.

All regular students are required to board in the barracks, except those who live with their parents near enough to attend from their homes.

Each student is required to purchase the prescribed uniform; also

a pair of over-shoes and a rubber coat. Students may provide themselves with such work-clothes as they desire.

Not more than three students are permitted to occupy the same room. Those occupying a room are consulted before another student is assigned to that room. A student not satisfied with his room-mates has the privilege of applying for permission to move to another room, and such applications are granted when practicable.

Cadets will at all times be respectful in their bearing to professors and other officers of the College.

The practice known as hazing is positively forbidden, and any cadet indulging in this practice will be expelled from the College.

Cadets are positively forbidden to use, or have in their possession, intoxicating liquors of any description.

The use of tobacco in any form by cadets is prohibited.

Profanity is positively forbidden.

Cards and all games of chance are positively forbidden.

All combinations of cadets for the purpose of censuring or praising one of their number are prohibited; also all combinations to defeat the purpose of any regulation of the College.

Fighting is positively forbidden. If any cadet shall consider himself wronged by another, or by a professor, or by an officer, he is to complain thereof in writing to the President, who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

Any cadet receiving 100 demerits during a term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

College Organization

The College is organized into six general departments, as follows:

1. Academic Department
2. Agricultural Department
3. Mechanical Department
4. Department of Chemistry and Natural Science
5. Textile Department
6. Military Department

ACADEMIC DEPARTMENT.—The departments of instruction in

Mathematics, English and History, which are common to all the courses, are collectively designated as "The Academic Department."

THE AGRICULTURAL DEPARTMENT comprises the following divisions: General Agriculture, including Animal Husbandry; Horticulture, Entomology, Botany, Dairying, Veterinary Science, Poultry Raising.

THE MECHANICAL DEPARTMENT comprises the divisions of Applied Mechanics, and Mechanical Engineering, Physics, Electrical Engineering, Drawing and Designing, Forge and Foundry, Machine Shop, Woodwork.

THE DEPARTMENT OF CHEMISTRY AND NATURAL SCIENCE includes Chemistry, general, industrial, agricultural and analytical; Geology and Mineralogy.

THE TEXTILE DEPARTMENT comprises the courses in Textile Industry.

THE MILITARY DEPARTMENT comprises theoretical and practical instruction in Military Science and Tactics.

Experiment Station

The State Experiment Station occupies a portion of the College farm, and affords valuable opportunities for instruction in the various divisions of the Agricultural department.

Under the guidance of the Station officers, the students are expected to familiarize themselves with the different lines of investigation being carried on, and thus to have their interest in agricultural topics awakened, their powers of observation strengthened, and to learn to tabulate and compare results of experiments conducted and to draw conclusions therefrom. The organization and work of the Experiment Station are described at the end of this catalogue.

Farmers' Institutes

During the past year farmers' institutes were held, under the management of the College, in many Counties of the State. The President and Professors of Agriculture, Chemistry, Horticulture, Dairying, Veterinary Science, Botany and other members of the faculty have taken part in these institutes. The purpose has been to bring practical information to the farmer, and to give him the results of scientific investigation in the interest of Agriculture. The success thus far attained is most encouraging, and leads to the hope

that these institutes may become a permanent feature in the work of the College.

They will be continued during the coming vacation. A special institute of seven days' duration will also be held at the College during the month of August, in which, besides the College faculty, a number of prominent speakers from other States are expected to participate.

Farmers wishing an institute held in their County or community should write to the President.

Student Labor

The College assumes no obligation to furnish employment to students for wages. Considerable manual labor is necessary to carry on the Agricultural and Mechanical departments of the College. When practicable students are employed in this work and are paid for it at eight cents an hour; but no student is allowed to undertake work that interferes with his College course. The number of students who apply for work always exceeds the number that can be employed. Students who enter late are at a special disadvantage in securing this work.

Religious Influences

Every effort is made to surround the students with safe religious influences. There is preaching in Memorial Hall every Sunday morning by ministers of the different denominations, and chapel services are conducted every morning by the President and other members of the faculty. All students are required to attend these exercises unless specially excused.

A Sunday School, at which attendance is voluntary, also meets every Sunday morning, and students are encouraged and urged to attend.

Young Men's Christian Association

This is a voluntary organization of the students, and is entirely under their management. The objects of the Association are to promote Christian fellowship among its members and aggressive Christian work among the students. The meetings are held in Memorial Hall every Sunday evening. The membership is of two classes—active and associate. A member in good standing of any evangelical church may become an active member of the Association,

and any young man of good moral character may become an associate member. The faculty are in hearty sympathy with the work of the Association, and render cheerful service when requested to do so. Parents and guardians are advised to encourage the students to join the Association as soon as they reach the College.

Care of the Sick

The College Surgeon will keep parents fully informed of the condition of sick students. In case of serious illness parents are notified by telegraph.

Students have permission to call on the Surgeon at any time for advice and treatment. The Surgeon cannot undertake to notify parents every time a student reports to the hospital for medicine or rest, on account of some slight complaint; but parents may rest assured that they will hear from the Surgeon promptly in case of sickness of any consequence.

The health record for the past year has been exceptionally good, and many sanitary improvements have been made to insure the continued health of the students.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.

Library

In the Agricultural building are a series of rooms specially constructed for the use of the Library. About 5,000 volumes of standard English literature, history, biography, general science, etc., and about 1,000 volumes of government publications are now on the shelves. The number of books is being added to each year. They have been recently classified and arranged, and excellent opportunity is now offered students for general and supplementary reading.

In recent purchases for the Library special efforts have been made to procure all available books on South Carolina history and literature.

Museum

In the Library suitable cases have been provided for the preservation of curios and relics. The museum is small, but is growing rapidly, and now contains a number of valuable and interesting articles. Donations are earnestly requested. All gifts will be labeled with the names of the donors. Among the recent acquisitions to the museum

is a lithograph copy of the Ordinance of Secession, presented by the Hon. W. A. Courtenay.

Reading Room

Connected with the Library is the students' reading-room, supplied with the leading magazines and daily papers, and most of the County papers of the State.

Literary Societies

Three literary societies, the Calhoun, the Palmetto and the Columbian, furnish a valuable supplement to the work of the College. These societies afford facilities for practice in debate, oratory, declamation and essay-writing, and their members acquire valuable knowledge of parliamentary law and usage. The meetings are held weekly on Friday evenings. Public celebrations and contests are also held at intervals during the year, at which there are debates, orations and declamations by the students.

The societies occupy halls in the main College building, which are furnished with carpets and opera-chairs, and are maintained entirely by the students. A small fee is charged for initiation, and there are also monthly dues of a few cents to meet running expenses. The total membership usually comprises about nine-tenths of the registered attendance at the College. All students are advised to join one of these societies.

THE CLEMSON COLLEGE CHRONICLE, a magazine designed to encourage literary work among the students, is published monthly during the session by the literary societies.

Science Club

The Clemson College Science Club was organized for the purpose of promoting knowledge of the progress of the natural sciences, theoretical and applied. Public meetings are held every month, at which subjects of general scientific interest are discussed by members of the faculty and advanced students of the College.

Lecture Course

A lecture course, employing some of the best talent on the American platform, has been provided for the coming session. These lectures will be delivered in Memorial Hall, and will occur monthly

while the course is in progress. The cost to students will be about \$1.00 for the course.

Cadet Exchange

A Cadet Exchange is maintained, where students may purchase at wholesale prices necessary articles, such as books, stationery, collars, cuffs, underwear, etc.

Athletics

It is the policy of the College to sanction and encourage athletics so long as studies and other duties are not interfered with. Class records show that, as a rule, students engaged in athletics do as well in their classes as those who are not. Should future experience reverse these records athletic sports will be restricted or prohibited altogether.

The following resolution relative to athletics has been passed by the faculty: That it is the sense of the faculty that only cadets in good class standing be permitted to play in any intercollegiate game of tennis or of ball—either base or football—to appear in any public exhibition or on the rostrum; or to attend as Clemson's representatives any meeting of any sort at any time or place.

The most popular games this year are baseball and football. It is assumed that parents are willing for their sons to participate in these games unless the President is definitely notified to the contrary. The athletic teams will be permitted to take a few trips each season, usually on Saturdays, to play intercollegiate games. Students must file written permission from parents for these trips.

Rules of the South Carolina Inter-Collegiate Athletic Association

The following rules are an abstract of the Constitution of the South Carolina Inter-Collegiate Athletic Association, to which the following colleges belong: South Carolina College, Wofford College, Newberry College, Clinton College, South Carolina Military Academy, and Clemson College:

ARTICLE VII. QUALIFICATION OF CONTESTANTS

The following persons are debarred from playing with or against the colleges in this Association:

1. Any student who has ever received compensation for his athletic services, or is a professional by definition of the Constitution,

unless such party was a regularly matriculated student of a college on December 27, 1900.

2. Any student who since that date has received compensation or is a professional.

3. Any student who receives any compensation whatever from the College he is attending for his athletic services.

4. Any student who enters College later than thirty days after the opening of the academic year.

5. Any student doing less than ten hours satisfactory class work, or any post-graduate student of more than two years' standing, or who is doing less than five hours satisfactory class work.

6. Any student playing under an assumed name.

7. Any student who, when called upon to sign a statement that he is in no way violating the Constitution of this Association, refuses to do so.

Distinguished Students

Students who make an average of 90 per cent. or more on each and every study for the entire session are designated as *distinguished*. Following is a list of the students who have attained this distinction during the past year :

SESSION 1901-1902

Senior Class: S. C. Stewart.

Junior Class: T. S. Gandy and T. M. Harvey.

Medals

PRESIDENT'S ESSAY MEDAL.—A gold medal is offered annually by the President for the best essay. The subject is announced early in the year and the competition is open to all students.

Awarded in 1902 to Mr. H. C. Tillman.

SOCIETY MEDALS.—The literary societies award medals for excellence in debate, oratory and declamation.

THE CLEMSON COLLEGE CHRONICLE also awards three medals, for the best poem, the best story and the best essay appearing in that publication during the year.

Courses of Study

A selection between the Agricultural and other courses is made at the end of the first term of the Freshman year. The selection between the Mechanical and Textile courses is made at the beginning of the Sophomore year. Students in the Mechanical course choose between Electrical Engineering and Civil Engineering at the beginning of the Junior year.

Agricultural Course

Freshman Class

	Hours per week			Hours per week	
	1st	2d		1st	2d
	Term	Term		Term	Term
THEORETICAL			PRACTICAL		
Mathematics	5	5	Woodwork	3	3
English	5	5	Mechanical Drawing	3	0
History	3	3	Freehand Drawing	4	4
Agriculture	2	2	Forgework	3	0
Physics	0	3	Botany	0	3

Sophomore Class

Mathematics	5	3	Chemical Laboratory ...	4	4
Surveying	0	2	Surveying Field Work..	0	2
English	3	3	Stock Breeding	0	2
Chemistry	3	3	Agriculture	2	2
Stock Breeding	0	2	Entomology	0	3
Horticulture	2	0	Botany	2	0
Botany	1	0	Horticulture	2	0
Agriculture	2	0	Zoology	2	0
Zoology	1	0			
Entomology	0	1			

Junior Class

English	2	2	Chemical Laboratory ...	6	6
History	5	0	Soil Physics (Agr.).....	2	0
Chemistry	2	2	Horticulture	0	2
Military Science	0	2	Dairying	4	0
Dairying	4	0	Entomology	0	4
Soil Physics (Agr.).....	2	0	Botany	2	0
Horticulture	0	2	Veterinary Science.....	0	2
Entomology	0	1	Mineralogy	0	2
Veterinary Science	0	4			

NOTE.—Military drill occupies 45 minutes a day, five days in the week.

Senior Class

	Hours per week			Hours per week	
	1st	2d		1st	2d
	Term	Term		Term	Term
THEORETICAL			PRACTICAL		
English	2	2	Chemical Laboratory....	6	6
History	0	3	Veterinary Science.....	3	3
Chemistry	2	2	Mineralogy	2	0
Geology	2	3	Agriculture	0	2
Cattle Feeding	2	0	Bacteriology	4	0
Veterinary Science	2	3	Horticulture	0	2
Bacteriology	4	0			
Entomology	0	2			
Military Science	0	2			

Mechanical Course

Freshman Class

Mathematics	5	5	Woodwork	3	3
English	5	5	Mechanical Drawing ...	3	3
History	3	3	Freehand Drawing	4	4
Agriculture	2	2	Forgework	3	3

Sophomore Class

Mathematics	5	5	Woodwork	3	3
English	3	3	Mechanical Drawing ...	3	2
Chemistry	3	*3	Foundry	3	3
Natural Philosophy	2	2	Chemical Laboratory ...	4	*3
History	3	2	Descriptive Geometry ...	0	3

Junior Class

Mathematics	5	5	Machine Shop	4	4
Physics	2	2	Mechanical Drawing	3	3
Electrical Engineering or Civil Engineering.....	3	3	Electrical Lab. or Civil Engin'ring Field Work	3	3
Mechanics	2	2	Physical Laboratory	3	3
English	2	2			
Military Science	1	1			

*Second Term—Chemistry, first half, 3 hours. Surveying, second half, 3 hours theoretical, 2 hours practical.

NOTE.—Military drill occupies 45 minutes a day, five days in the week.

Senior Class

	Hours per week			Hours per week	
	1st	2d		1st	2d
	Term	Term		Term	Term
THEORETICAL			PRACTICAL		
Mechanical and Steam			Shopwork	4	4
Engineering	5	5	Machine or Bridge De-		
Electrical Engineering or			sign	3	3
Civil Engineering	5	5	Electrical Laboratory or		
History	0	3	Civil Eng. Field Work	3	3
English	2	2	Mechanical Laboratory..	3	3
Military Science	1	1			
Geology	3	0			

Textile Course

Freshman Class

Mathematics	5	5	Woodwork	3	3
English	5	5	Mechanical Drawing ...	3	3
History	3	3	Freehand Drawing	4	4
Agriculture	2	2	Forgework	3	3

Sophomore Class

Mathematics	5	5	Mechanical Drawing	3	2
English	3	3	Chemical Laboratory ...	4	4
Chemistry	3	3	Descriptive Geometry ...	0	2
Natural Philosophy	2	2	Machine Shop	3	3
History	3	2			

Junior Class

Mathematics	5	5	Textile Industry	9	9
Chemistry	2	2	Chemical Laboratory ...	4	4
Textile Industry	4	6			
English	2	2			
Military Science	1	1			
Mechanism	2	0			

Senior Class

Mechanical Engineering.	5	0	Mechanical Drawing	2	2
Textile Industry	8	10	Textile Industry	11	8
English	2	2	Mechanical Laboratory..	0	3
Military Science	1	1			
History	0	3			

NOTE.—Military drill occupies 45 minutes a day, five days in the week.

Special Textile Course

First Year

	Hours per week			Hours per week	
	1st	2d		1st	2d
	Term	Term		Term	Term
THEORETICAL			PRACTICAL		
Carding and Spinning...	2	2	Carding and Spinning...	5	5
Designing	3	3	Weaving	6	6
Textile Chemistry	2	2	Chemical Laboratory ...	4	4
Mechanics	2	2	Freehand Drawing	3	3
			Mechanical Drawing	3	2

Second Year

Carding and Spinning...	2	2	Carding and Spinning...	5	5
Designing	3	3	Weaving	7	7
Cloth Analysis	3	0	Dyeing	8	8
Jacquard Designing and Tie-ups	0	3			
Textile Chemistry	2	2			

This course presupposes a knowledge of general inorganic chemistry.

Subfreshman Class

A Subfreshman course is provided for students not prepared to enter the Freshman Class. In addition to instruction in the usual preparatory branches, agriculture, drawing and military drill are also included in this course. The work is closely articulated with the instruction in the advanced classes.

Special Courses

Graduates of this and other institutions, or other mature young men of earnest purposes, who desire to pursue special lines of work will be given every opportunity that the College affords, upon satisfying the faculty that they are qualified to undertake such courses to advantage. Students thus admitted are expected to apply themselves assiduously, and with the approval of the faculty, may board outside of the barracks.

Irregular Courses

Students are earnestly advised to pursue regular courses; but those who for satisfactory reasons are unable to do so, may, upon the approval of the faculty, pursue irregular courses. No student whose time is not fully occupied will be permitted to remain at the College. A student who is behind in any subject will not be permitted to change from a regular to an irregular course. An application for an irregular course must be accompanied by the written approval of parent or guardian, and of instructors in all subjects for which application is made. Diplomas are not issued to irregular students.

Instruction and Equipment

General Agriculture

PROFESSOR NEWMAN

ASSISTANT PROFESSOR CONNER

This study is pursued in all of the classes, commencing with the elementary principles in the Freshman year. During this year the instruction is confined to the application of principles and practice which do not require a knowledge of the sciences related to agriculture.

As the student progresses in the study of the natural sciences, the application of these sciences is taught in their relation to the art of agriculture, special stress being placed upon the protection, improvement, fertilization, and all manipulations of the soil in the preparation for planting and in the cultivation of crops.

The cultivation of each important crop is discussed in the concrete. Special attention is bestowed upon the grasses and their cultivation. In the higher classes the employment and management of labor, farm equipment, and farm management are discussed.

Text-books: Elements of Agriculture, by J. B. McBryde; Principles of Agriculture, by L. H. Bailey.

Reference-books: Voorhees' First Principles of Agriculture, Storer's Agriculture, Experiment Station Bulletins, Leading Periodicals.

Equipment

The College has a large storage barn provided with silos, a cow barn furnished with various forms of stanchions, a mule barn provided with the most improved forms of stalls and feed-racks, implement and wagon sheds for storage of tools, etc., compost building for making compost in large quantities, and two large cribs for storage of corn.

Among agricultural machinery and implements may be mentioned the following: Self-binder, corn-harvester, Deering ball-bearing mower, Osborne mower, self-dumping rake, check-row corn planter, Buckeye cultivator, B. F. Avery cultivator, Tower cultivator, disc-cultivator, spring-toothed harrow, smoothing harrows, various forms of pulverizers, manure-spreading machines, fertilizer and grain drill, various forms of small fertilizer drills, Planet, Jr., drill, two Planet, Jr., plows, scientific mill, stone grist mill, Tornado ensilage cutter, small thresher, hand-gin, rock-crusher, road machine, three terrace levels, and a 10 kw. electric motor.

Horticulture

MR. C. C. NEWMAN

The course in horticulture consists of horticulture proper, home gardening, truck farming, pomology, viticulture, canning and experiment work.

Instruction is given by text-book and lectures, covering the subject of horticulture in its comprehensive sense. The instruction is continued through the entire course and is illustrated by practical exercises in the garden, the orchard, the vineyard and the greenhouse.

In the practical work, the student is required to labor, and is thereby taught by actual experience the use of tools, the proper mode of preparing, fertilizing and cultivating the soil; shipping, storing, and canning vegetables and fruits; training and pruning vines and trees; propagating plants by seeds, grafts, buds, layers, leaves, and divisions. Instruction is also given in the making and use of hot-beds, cold-frames, mulching, etc., together with the art of forcing, crossing, and hybridizing, and the care of plants in the greenhouse.

Equipment

The Horticultural building, a two-story frame house, contains the classroom, offices and collections of the horticultural division, and the local office of the United States weather bureau.

The equipment for practical instruction in horticulture consists of the following: canning outfit complete; greenhouse, 21x140 feet, heated by hot water; experimental garden, about five acres; orchard, vineyard, and plats of small fruits, twenty acres, and a small nursery.

Zoology and Entomology

MR. CHAS. E. CHAMBLISS

The instruction in this division is largely conducted by the laboratory method with lectures and recitations, and is so given as to lead the student to observe and think for himself, as well as to secure a working knowledge of the science for practical purposes.

Sophomore Class

GENERAL INVERTEBRATE ZOOLOGY.—This course includes a general discussion of groups, and dissection of types, especially of the forms

related to insects, and is further extended to lay a foundation for a knowledge of animal development. Animals of economic importance are given special attention.

Books of Reference: Invertebrate Morphology (McMurrick); The Riverside Natural History.

ELEMENTARY ENTOMOLOGY.—This is a laboratory course in entomology devoted mainly to the general structure of insects, and is designed with special reference to economic ends.

Text-book: Elements of Insect Anatomy (Comstock and Kellogg).

Books of Reference: A Text-book of Entomology (Packard); Guide to the Study of Insects (Packard); Insects (Hyatt and Arms).

Junior Class

ECONOMIC ENTOMOLOGY.—By laboratory studies and field work, the students, in this course, will be made familiar with the most important injurious insects. For the systematic and biological work, a collection of fifty species, with full notes on the habits of ten, will be required. The practical work will consist of the preparation and application of insecticides.

Text-book: Manual for the Study of Insects (Comstock).

Books of Reference: Insects Injurious to Fruits (Saunders); Economic Entomology (Smith); U. S. Government, Experiment Station and State Publications on Entomology.

Equipment

The Zoological and Entomological Laboratory is located in Agricultural Hall. The equipment includes compound and simple microscopes, an automatic laboratory microtome, dissecting instruments, camera, stereopticon, lantern slides and charts. The entomological cabinet contains a large number of injurious and beneficial insects of South Carolina. The students have access to a small but carefully selected entomological library.

Botany

MR. METCALF

Sophomore Class

SECOND TERM.—During the second term of the Sophomore year the students of the Agricultural course receive instruction in general

botany. During this term they become familiar with the general structure of plants—beginning with the simplest forms and studying to the complex. Incidentally they learn how to manipulate the simple and the compound microscope. A large portion of the time is spent on flowering plants. As this term's work is the basis for the more advanced botanical studies in the course, considerable stress is laid upon the underlying principles of plant morphology and plant structure.

Junior Class

FIRST TERM.—During this term lessons in plant physiology are given. Some of the simple and fundamental principles are studied. Experiments with water cultures and others of a similar nature are carried on by the students.

SECOND TERM.—During the second term the class takes up the study of plant diseases. Attention is directed especially to the diseases of economic plants. They are taken up from a systematic standpoint of the parasite. A careful microscopic study is made; its effect on the pest noted, and the remedy learned.

The practical work consists in microscopic study in the laboratory, exercises in studying the diseases in the field, and collecting specimens—each student collecting and naming correctly an herbarium of twenty-five species of parasitic fungi.

Senior Class

FIRST TERM.—During the first term the class receives instruction in bacteriology. During this work the student becomes familiar with the different methods of sterilization and different culture media. Several species of bacteria are cultivated, mounted and studied in detail. The class is also required to isolate and study a bacterium from a mixture of species. It is the object of the course to acquaint the students with the fundamental principles of bacteriology.

Equipment

The botanical laboratory is located on the third floor of Agricultural Hall. The northern exposure makes it especially suitable for microscopic work.

In the laboratory equipment there are the following pieces of apparatus: twenty-five simple microscopes, twenty-two compound microscopes (six of these are bacteriological microscopes), incubator, glass dishes, sterilizer, embedding bath, students' microtome, section cutters, etc.

A creditable beginning has been made in collecting an herbarium. This

collection includes plants collected in the State, plants received by exchange, and a donation of about twenty-five hundred mounted specimens from Dr. A. P. Anderson. This donation includes plants collected in Minnesota and in Europe, including many species not present in the flora of South Carolina.

Dairy Husbandry

MR. UPTON

Junior Class

Students who take the course in Agriculture receive instruction in the formation and management of a dairy, care of the cows, and feeding for milk production.

In the dairy building the instruction is supplemented by practical work in the care of milk, separation of cream, making butter and cheese, and testing milk and its various products.

The text-book used is Wing's "Milk and its Products," in addition to which the latest methods are gleaned from the various experiment station bulletins.

Those wishing to take a short course in practical work can enter February 1st and continue for ten weeks, during which time instruction will be given similar to that in the regular course.

Students taking the short course must be employed as many hours per week as those in the regular course.

Board and tuition will be the same as for other students in the regular courses.

Equipment

The commodious dairy building has an independent steam plant and water-works, and is supplied with everything needed for making butter and cheese on a factory and private dairy scale, including the leading makes of cream-separators, churns, butter-workers, milk-testers. Students are thoroughly drilled in the use of this apparatus.

Animal Husbandry

MR. UPTON

Sophomore Class

STOCK BREEDING.—A careful study of the different types of domestic animals is pursued, and the student is thoroughly drilled in the principles and methods of successful breeding, heredity, atavism, variation, selection, fecundity, influence of environment, in-breeding, cross-breeding, grading, influence of previous impregnation.

The different breeds of horses, cattle, sheep and swine are considered, and those best adapted to the South are discussed at length.

The College farm has a number of breeds of domestic animals which serve to illustrate the subject.

As a supplement to this work, the student is drilled in the use of the score-card, which fixes the different types and breeds firmly in his mind.

Senior Class

STOCK FEEDING.—This course includes the following subjects: Laws of animal nutrition; composition of the animal body; fodders as a source of nutrients; digestion, resorption, circulation, respiration, and excretion; formation of muscle, flesh and fat; composition and digestibility of feeding stuffs, and their preparation and use; feeding for fat, for milk, for wool, for work and for growth.

The available feed-stuffs of the South are discussed at length. Henry's "Feeds and Feeding" is used as a text-book.

Veterinary Science

DR. NESOM

DR. SHEALY

The object of this course is to acquaint the agricultural student with the elementary principles of veterinary medicine and surgery. The time is too short to make professional veterinarians of those who take this study, but is sufficient to make them more intelligent stockmen when graduated.

The instruction begins with the second term in the Junior year of the Agricultural course and is given as follows:

Junior Class

SECOND TERM.—Anatomy, Physiology and Histology of the domestic animals, four hours a week class room and two hours a week laboratory. Texts, "A Manual of Veterinary Physiology," F. Smith; "Manual of General Histology," Wm. S. Gottheil.

Senior Class

FIRST TERM.—Surgery, Materia Medica and Pharmacy, two hours a week class room and three hours a week clinic and laboratory. Lectures on Surgery and Pharmacy. Text: "A Compend of Veterinary Materia Medica and Therapeutics," A. C. Hassloch.

SECOND TERM.—Lectures on the Principles and Practice of Veterinary Medicine, three hours a week class room and three hours a week clinic.

Only the more common diseases of farm animals can be considered during the limited time devoted to this study, but special attention is given to those diseases that occur in epizootic outbreaks. Among these may be mentioned glanders, anthrax, Texas fever, tuberculosis, cholera, sheep "scab," hydrophobia, and favus. Careful consideration is given to the bacteriological and parasitic agencies causing the diseases.

LABORATORY.—Laboratory work is given during the lectures to illustrate the structure of normal and pathologic tissues and the simpler reactions in chemical physiology. In pharmacy each student is required to compound a limited number of prescriptions.

CLINIC AND DISSECTION.—Every Monday afternoon a free clinic is held at the veterinary hospital. This is liberally patronized by the stockmen of the surrounding country, and affords the students ample practical work in surgical operations and the treatment of animal diseases. Advantage is taken of accidental material for post-mortem examination and gross dissection.

POST-GRADUATE AND SPECIAL WORK.—Graduates of this and other colleges and young men found proficient in the elementary branches of science and literature may receive special instruction. This work is designed as a preparatory course to entrance into a regular veterinary college. The special needs of each student are considered, and the work is planned to meet his individual case. The course taken here will shorten the time necessary for graduation from the leading veterinary colleges, whether the student desires to

become a veterinary practitioner, government meat-inspector, or army veterinarian.

Equipment

The veterinary class-room and laboratory is about 30x50 feet, provided with steam heat, electric lights, water, gas, and the necessary furniture. It is amply supplied with chemicals and the best apparatus for technical work,

The veterinary hospital is a structure of modern design, 48x65 feet, containing apartments for office, drugs, dissecting and horse-shoeing, besides stalls, feed-bins, water supply and electric lights. One of the best revolving operating tables has been provided. The surgical instruments and appliances now on hand, with a few additions, would do credit to a regular veterinary college. A complete outfit for horse-shoeing is provided. A good stock of drugs and chemicals is kept on hand and prescriptions are filled on request.

Poultry Industry

MR. WATSON

Instruction in this division will embrace a careful study of the origin, and the qualities of the different breeds of poultry, and the student is thoroughly drilled in the principles and methods of successful poultry breeding.

Instruction is given by lectures. Practical work will be done in caponizing, management of incubators and brooders, and judging of fowls by comparison and by score card system.

THE POULTRY YARDS are supplied with incubators, brooders and other modern appliances. There are thirty-six pens, 20x32 feet, each containing a house 6x8 feet. For every four pens there is a run of 80x150 feet, all enclosed with poultry cabled wire.

Chemistry

PROFESSOR HARDIN

ASSISTANT PROFESSOR BRACKETT

MR. SHIVER

MR. HENRY

Sophomore Class

BOTH TERMS.—*General Chemistry*.—Inorganic chemistry and the leading facts and principles of organic chemistry. Text-book, Roscoe's *Elementary Chemistry*. *Laboratory*—Introductory work and

qualitative analysis. Text-book, Jones' Junior Course in Practical Chemistry.

Junior Class

BOTH TERMS.—*Industrial and Analytical Chemistry*.—The applications of chemistry in the more important arts and manufactures. Among the subjects studied are: Sulphuric acid; soda; chlorine; potash salts; fertilizers; lime, mortar and cements; glass; porcelain; illuminating gas; coal tar; mineral oils; vegetable and animal oils; soap; fermentation industries, etc. Text-book, Thorp's Outlines of Industrial Chemistry. *Laboratory*—Qualitative and quantitative analysis and assaying. Books used: Jones' Junior Course in Practical Chemistry, Fresenius' Qualitative and Quantitative Analysis.

Senior Class

BOTH TERMS.—*Agricultural and Analytical Chemistry*.—The composition of plants, the sources of plant-food, the composition of soils, the improvement of soils by chemical means, the composition and manufacture of fertilizers, the composition of feeding-stuffs and of dairy products. Text-book, Johnston's Elements of Agricultural Chemistry, edited by Cameron and Aikman. *Laboratory*—Quantitative analysis of fertilizers, soils, ashes of plants, water, cattle-foods and dairy products. Books used: Bulletins of U. S. Department of Agriculture, containing methods of analysis adopted by the Association of Official Agricultural Chemists.

Equipment

The original Chemical Laboratory is a two-story brick building, 50x80 feet, covered with slate and finished inside with Southern pine. Overlapping this at one corner, and connected with it by a glass-enclosed passage, is a new and somewhat similar building, 53x86 feet, of modern style and handsome design. This double building, which is well ventilated, heated by steam, and lighted by electricity, constitutes a commodious structure adequate to all the needs of the Department.

On the first floor of the old building, which is used for academic work, there are five rooms. Two of these, connecting with each other, are employed as a laboratory for the Agricultural Seniors. Of the other rooms on this floor, one is a laboratory for post-graduate students and one a balance room, while the third is reserved for such use as the ever increasing demands upon the Department may require.

On the second floor of this building, there are two large laboratories, one for the Juniors in Analytical Chemistry, the other for the Sophomores in General Chemistry. A third and smaller room is used as a balance room.

The Junior laboratory will accommodate seventy-two students, thirty-six at a time; the Sophomore laboratory, one hundred and twenty students, sixty at a time. The laboratories are all provided with hoods for carrying off noxious gases, convenient working tables, water, gas, electric lights, and all necessary appliances for experimental work.

The basement of the building is used for assaying, for the preparation of distilled water and for storage. The air pump and the mixer of the gas machine for supplying the laboratories with gas are placed in this basement and connected with the generator, which is in a brick vault eighty-five feet from the building.

On the first floor of the new building there are nine rooms, all of which are appropriated to the chemical work of the State and of the Experiment Station. On one side of the wide hall which extends the entire length of the building are two rooms for the analysis of fertilizers. Three of these rooms are used respectively for the determination of phosphoric acid, ammonia and potash; the fourth as a balance room; the fifth and last as a sample room. On the other side of the hall there are four rooms. The largest of these is used for the Agricultural Analysis of the Station. Adjoining this is a balance room, in which provision is made also for the optical and electrolytical apparatus. Of the remaining rooms, one is used for water analysis, the other as an office.

On the second floor of this building there are seven rooms; a lecture room, and six smaller rooms which are used for recitations, cabinets, apparatus, chemicals, library and Professor's laboratory.

The lecture room will seat one hundred and seventy students, the seats being arranged in tiers.

The hoods in this building are all connected by earthenware pipes with a tightly-built room, just under the roof, over which there is a large ventilator. An electric fan will be placed in this room, should the draught be found insufficient without it.

The rooms in the basement are used for assaying ores, for the preparation of agricultural products for analysis, and for storage. An electric motor located in one of three rooms supplies the power which drives the machinery for grinding and pulping samples of vegetable substances.

Geology and Mineralogy

PROFESSOR LEWIS

Agricultural Juniors

SECOND TERM.—*Mineralogy*.—The elements of Crystallography, with laboratory study of crystal forms by the use of models and natural crystals and the construction of simple drawings; the chemical and physical properties of minerals; laboratory tests of known minerals and practice in the determination of unknown specimens.

Agricultural Seniors

FIRST TERM.—*Determinative Mineralogy*.—A continuation of the above course. Practical study of the common minerals by determinative work in the laboratory, by comparison with labeled specimens of the systematic collection, and by the use of unlabeled collections for practice in identifying minerals at sight.

BOTH TERMS.—*General Geology*.—The elements of dynamical, structural, and historical Geology. The influences of geologic phenomena on man are emphasized, particularly in the study of rock-decomposition and the formation of soils, the processes of erosion and deposition, and the resultant topographic forms. In historical geology special attention is given to the development of the North American continent.

SECOND TERM.—*Economic Geology*.—A supplementary course of about twenty lectures given upon the completion of the course in general Geology. The origin and general characters of ore-deposits; the ores of the more useful metals; as iron, copper, lead, silver, gold, etc.; the origin and distribution of the principal non-metallic minerals of value; as coal, petroleum, natural gas, mineral fertilizers, clays, etc. The lectures refer particularly to the economic deposits of the United States.

Engineering Seniors

FIRST TERM.—*Geology*.—This course is designed to furnish a general knowledge of the science, with special emphasis on structural and dynamical Geology in their relations to engineering materials and practice. Specimens are freely used in illustration of the course, in order that the student may acquire a practical acquaintance with the most important rocks and minerals.

Equipment

The systematic collections contain over a thousand labeled specimens of rocks, minerals, and fossils. These are exhibited in glass cases in the laboratory, and are always available to students. There is also an unlabeled collection of minerals for practice in identifying the more important species at sight. Unlabeled collections of the most useful minerals are provided for determinative work in the laboratory.

The laboratory is supplied with water and gas and all apparatus and reagents necessary for the determination of minerals by means of their chemical and physical properties. A chemical balance is also provided, and a Bausch &

Lomb petrographic microscope, with photomicrographic camera and all important accessories.

The class-room is supplied with large physical wall maps of the world and of all the continents, a select series of topographic contour-maps furnished by the United States Geological Survey, an 18-inch terrestrial globe, a 20-inch relief globe (Jones' "New Model of the Earth"), a set of geological and geographical relief models, and several hundred lantern slides.

The library of the department contains the principal standard works of reference in geology and mineralogy, and receives all publications of the United States Geological Survey as issued, including annual reports, monographs, geologic folios, and bulletins.

Mechanical Engineering

ASSISTANT PROFESSOR BARNES

In these courses the student is taught the application of his scientific, mathematical and technical knowledge to the design and construction of engineering structures, and of machinery and manufacturing plants in general.

Junior Class

FIRST TERM.—*Elementary Mechanics*.—Motion, force, velocity, work, energy, power, stress, strain, elasticity, resilience, moments of force, centre of gravity, moments of inertia, momentum, hydrostatics.

Text-book—Wood's *Elementary Mechanics*.

SECOND TERM.—*Mechanism*.—Spur, bevel, and screw gearing, belt gearing, lobed and elliptic wheels, epicyclic trains, escapements, ratchet motions, link motions, quick return motions, cam motions.

Text-book—Stahl and Wood's *Mechanism*.

Senior Class

BOTH TERMS.—Mechanical Engineering, five hours per week. Lectures and recitations, on the design and construction of steam boilers, heaters, pumps and injectors; theory and design of simple, compound and triple expansion steam engines, gas and gasoline engines, hot air engines, air compressors and motors, ice and refrigerating machinery, heating and ventilating systems, transmission of power; engineering specifications and the law of contracts. Theory of the strength of engineering materials. Graphical solution of problems. Hydraulics.

Text-books—Kerr's Power and Power Transmission; Hutton's Mechanical Engineering of Power Plants; Church's Mechanics of Engineering.

BOTH TERMS.—*Mechanical Engineering—Laboratory Practice.*—Study, use and calibration of water-meters, weirs, steam gauges, indicators, dynamometers, calorimeters; efficiency tests of screw-jacks and hoists; tests of fuels and lubricants; tests of building materials, as iron, wood, brick, cement, etc.; erecting, lining up and setting the valves of plain slide-valve and automatic cut-off steam engines; indicator practice; horse-power and efficiency of steam, gasoline and hot-air engines and air-compressors and motors; efficiency trials of steam boilers; duty trial of steam pump and of College pumping engine.

Reference books—Carpenter's Experimental Engineering, Smart's Engineering Laboratory Practice, Thurston's Steam Engine.

Equipment

This laboratory occupies a room 41x45 feet, and contains the following equipment: For steam engineering: 15-horse power horizontal, locomotive type boiler; 6-horse power vertical boiler; Erie 6-horse power plain slide-valve steam engine; 6-horse power vertical steam engine built in the shops; Corliss cross-compound condensing steam engine arranged so that either side may be run condensing or non-condensing and each side independent of the other; Wheeler surface condenser with combined air and circulating pumps; set of steam-gauge testing apparatus; Carpenter's separating steam calorimeter; two throttling steam calorimeters; five steam engine indicators of various makes; two standard injectors. For hydraulic engineering: two hydraulic rams; Pelton water motor; power triplex pump; three duplex pumps of different makes; three weirs; recording altitude gauge; 6 pressure and altitude gauges. For compressed air: Clayton air compressor with jacketed cylinders; improved air motor. For fuel and lubricants: Carpenter's fuel calorimeter with scales, balances, and oxygen generating devices; standard viscometer. For testing building materials: 100,000-pound Olsen automatic vertical testing machine driven by 5-horse power Westinghouse electric motor, and fitted for tension, compression, and transverse testing; Fairbank's cement testing machine; 3,000-pound transverse testing machine. The laboratory also contains a 5-horse power Otto gasoline engine, an Ericsson hot-air engine, a 6-horse power transmission dynamometer, graduated to read horse power direct and built by students, and an assortment of standard thermometers, weights and measures. The apparatus is so arranged that any of it may be used for separate or combined tests, or for any original investigations. Besides the equipment in this room, the electric light and power plant, the heating plant of the College and barracks, the isolated plants at the dairy, horticultural grounds and pumping station are available for instructional purposes.

Electrical Engineering

PROFESSOR RIGGS
ASSISTANT PROFESSOR KYSER

Junior Year

BOTH TERMS.—Three hours per week are devoted to the study of electricity and magnetism, and the elementary design of electro-magnetic mechanism. The work of this session is largely in laying a foundation for the more strictly engineering work of the Senior year.

Text-books—Thompson's Elementary Lessons in Electricity and Magnetism, Electricity and Magnetism, Jackson.

BOTH TERMS.—*Laboratory Practice*.—Three hours per week for the session are devoted to experimentally verifying fundamental electrical laws, measuring currents, electro-motive force, resistance, quantity, induction, capacity, permeability, calibrating instruments, etc.

Reference book—Ayrton's Practical Electricity, Stewart and Gee's Practical Physics, Nichols' Physics, Vol. I., Gray's Absolute Measurements, Ewing's Magnetic Induction, Henderson's Practical Electricity and Magnetism, Vols. I. and II.

Senior Year

BOTH TERMS.—Five hours per week are given to the study and design of dynamo electric machinery. Special attention is given in the second half session to the study of alternating currents, and their applications to light and power. The course is supplemented by lectures and problems on synchronous and induction motors; design of transformers, transmission lines and plants; multiphase wiring, etc.

A dynamo design, with complete set of drawings, is required of each student as part of the course.

Text and reference books—Thompson's Dynamo Electric Machinery, Jackson's Alternating Currents, Vol. II., Alternating Currents, by Franklin & Williams, Dynamo Electric Machinery, Vols. I. and III., by Sheldon.

BOTH TERMS.—*Laboratory Practice*.—Three hours per week devoted to the care, management and testing of arc, incandescent and alternating current generators; direct current, synchronous and in-

duction motors; arc lamps; transformers; calibration of station instruments, incandescent lamp photometry, etc.

Equipment

ELECTRICAL INSTRUMENT LABORATORY.—This is a separate brick building, designed especially for delicate electro-magnetic work—no iron, steel or other magnetic substances having been used in its permanent construction. It contains, in addition to all necessary elementary apparatus, the following instruments: Kelvin-Deka ampere balance, Kelvin four-coil astatic galvanometer, four D'Arsonval dead-beat galvanometers, large ring tangent galvanometer, three Elliott Brothers' standard resistance sets, Elliott Brothers' standard tangent galvanometer, Queen's standard ballastic galvanometer, Nalder Brothers' sensitive galvanometer, Rowland-D'Arsonval ballistic galvanometers, Will-young standard condenser, Becker's chemical balance, Carhart-Clark standard cell, thermometers, Wheatstone bridges, storage and primary cells, etc.

DYNAMO LABORATORY.—To meet the demands of larger attendance and increased equipment, a new building has been provided in which is installed the dynamo-electric machinery. This building also contains a class room and a dark room for photometric work. It is a single story brick structure, 37x80 feet, with basement for supply rooms.

The first story is divided into a class room 25x35 feet, and a dynamo laboratory room 53-35 feet. The building is heated by steam and lighted by enclosed arc and incandescent lamps.

The lecture room has elevated seats and is equipped with a complete line of illustration models, apparatus and electrical instruments. It contains an electro magnet capable of supporting the weight of two tons.

The Dynamo Laboratory contains, in addition to rheostats, speed counters, switches, and other small apparatus, the following machines and instruments:

50 H. P. high speed Automatic Engine.

Direct Current Generators—15 K. W. Mather, 17 K. W. Lurdell, 2 1-2 K. W. Crocker Wheeler, two 2 K. W. Kester.

Direct Current Motors—15 and 10 H. P. Kester, 7 H. P. (built by students), three 1-6 H. P. Crocker Wheeler.

Direct Current Instruments—Weston Laboratory Standard Voltmetre, set of Weston portables, Jewell Ammeter and Voltmetre, Weston Switchboard Ammeter and Voltmetre, Thompson Recording Watt Metre, etc., etc.

Arc Lighting Apparatus—Brush and Thompson-Houston Generators, Genl. Elec. Co. constant current transformer, principal makes of open and inclosed arc lamps.

Alternating Current Apparatus—15 K. W. Genl. Elec. Co. 2 and 3 phase, revolving field generator complete with marble switchboard and full set of indicating instruments.

7 1-2 K. W. Genl. Elec. Co. single, two and three phase rotary converter; 7 K. W. 3 phase converter built by students.

Genl. Elec. Co. 2 and 3 phase induction motors. Three 3,000 volt constant

potential transformers. Assortment of small transformers, motors and models.

Alternating Current Instruments—2 Weston and one Genl. Elec. Co. watt metre, Weston Standard A. C. volt metre, 6 Thompson inclined coil ammeters and volt metres, Cardew & Elidrostatic volt metres, Keloin ampere balance, Seemens Electro-Dynamometer, Stanley hot wire Ammeter.

Miscellaneous—Two Schoeffer & Budenberg tachometers, leading types of lightning arresters, fuse testing apparatus.

The dark room contains a complete outfit for high potential, high frequency and X-ray work, and a Deshler-McAllister central station type photometer, with rotating stand for incandescent lamp testing.

COLLEGE POWER AND LIGHT PLANT.—The machinery in the dynamo laboratory is driven by the 50 horse power engine or a 20 horse power motor. Steam and electric power is furnished by the power plant situated in a neighboring building. This plant consists of an 85 horse power Corliss engine, driving a 40 kw. Weston generator and a 30 kw. General Electric Company's multipolar generator. This station furnishes power to 20 motors, ranging from 3 to 30 horse power. These motors are used at different points on the College property for a variety of purposes, such as pumping water, driving agricultural machinery, supplying power for machine shop, wood shop, textile department, etc. Several of these are at a considerable distance from the power station, thus furnishing examples of electrical transmission of power. Three of these, 7 horse power each, were built by students. In addition to power for driving motors, the same generators furnish electricity for lighting the barracks and other College buildings. Students have access to this plant, and are thus enabled to see the practical workings of a combined electric light and power plant, and to test its efficiency.

The aim of the course is to make practical as well as theoretical electrical engineers.

REQUIREMENTS.—Students desiring to take a special course in electrical engineering should remember that no one can hope to become an electrical engineer who has not the necessary foundations in mechanical engineering, to which electrical engineering is the superstructure. Two-thirds of an electrical engineer's training must be mechanical. No special classes will be formed, and students desiring to enter the Junior Class will be expected to be prepared on elementary mechanical drawing, physics and chemistry, and on mathematics, through plane trigonometry. They will be expected to take with the Junior Class, in addition to their electrical studies, physics, mechanics, mechanical drawing and machine shop work. Without these additional branches the student will not be prepared for the more strictly engineering work of the Senior year.

To enter the Senior Class, a student must be proficient in the work of the Junior year, in which physics and calculus are completed.

In addition to the electrical subjects prescribed for the Senior year, he must take—unless he is proficient along these lines—mechanics, mechanical engineering and laboratory, machine shop, drawing and machine design.

Students who are not prepared, or are not willing to take the other subjects

necessary to successful study of electrical engineering, will not be permitted to take a special course in electrical work.

Physics

MR. POATS

The course in Physics is intended to extend over the Sophomore and Junior years for students in Civil, Mechanical and Electrical Engineering. Students in the Textile Department take Physics during their Sophomore year, while Agricultural students are required to study the elements of Physics, during the second term of the Freshman year.

The instruction is by lectures and recitations, especial stress being laid upon those principles and facts which are fundamental to the several engineering professions. The lectures and recitations are illustrated by numerous experiments before the class.

In the Physical Laboratory the student is taught to perform for himself all the experiments of a general laboratory course. The Properties of Matter, the Laws of Mechanics, Heat, Electricity, Magnetism, Light and Sound are investigated. Students are required to make accurate and neatly written reports of all experiments.

Freshman Class

SECOND TERM.—*General Physics*.—*Text-book*—Rowland and Ames Physics, with lectures.

Sophomore Class

FIRST TERM.—Properties of Matter, Physical Measurements, Mechanics and Heat.

SECOND TERM.—Electricity and Magnetism.

Text-book—Carhart and Chute's Physics.

Junior Class

BOTH TERMS.—Sound and Light.

Text-book—Carhart & Chute's Physics.

LABORATORY WORK.—*First Term*.—Experimental determination of the physical properties of matter and the verification of Laws of Mechanics, Electricity and Magnetism. *Second Term*.—Experiments with Heat, Sound and Light.

Reference Books—Chute's Practical Physics, Ames' Manual of Experiments in Physics, Carhart & Patterson's Electrical Measurements and others.

Equipment

The Physical Lecture Room and Laboratory is situated in the main College building, is 33x60 feet, and is well equipped for both the lecture and experimental work of a general course in physics.

Drawing

MR. LEE

MR. KLUGH

*MR. MATTHEWS

All members of the Freshman Class are required to take Freehand and Mechanical Drawing. Members of the Sophomore, Junior and Senior Classes in Mechanical, Electrical and Civil Engineering, and of the Senior Class in Textile Engineering, are required to take Mechanical Drawing. The Subfreshman Class is given Freehand Drawing during the first term and Mechanical Drawing during the second term, but a knowledge of drawing is not necessary for admission to the Freshman Class.

Throughout the entire course the best methods of work in the drawing rooms of workshops and manufacturing establishments are given.

Freshman Class

FREEHAND DRAWING.—Graded exercises in sketching from plaster coats, machine parts and other objects in pencil, charcoal and ink, particular attention being paid to outlines and perspective.

MECHANICAL DRAWING.—Exercises in the use of drawing instruments, geometrical problems with circles and straight lines, lettering, conventional section and shade lines, working drawings of simple parts of machines from objects.

Sophomore Class

Working drawings of machines or parts of machines from sketches and specifications. Elementary principles of machine design; con-

*Resigned; successor to be appointed.

struction of screw threads, proportioning of bolts and nuts; Isometric drawing, tracing and blue printing.

DESCRIPTIVE GEOMETRY.—Problems with lines and planes; simple solids in simple positions; intersection and development of surfaces; shades and shadows, axonometric projection and perspective.

Junior Class

MECHANICAL DRAWINGS.—Working drawings of machines from sketches and specifications. Elementary principles of design continued—riveting, couplings, belt gearing, cams, gear teeth, etc., tinting, railroad and map drawing, plans and details of bridges and buildings. Work is assigned with reference to the course of study a student is pursuing.

Senior Class

MECHANICAL DRAWING.—Toothed gearing and details of steam engine, electrical and textile machinery, map and bridge drawing. Design drawing required in graduation thesis.

Reference Books—"Mechanical Drawing and Elementary Machine Design," by J. S. & D. Reid; "Machine Drawing and Design," by Low and Bevis; "Machine Design," by Unwin; "Lettering," by C. W. Reinhardt; "Plain Lettering," by Henry S. Jacoby; and others.

Equipment

The drawing rooms occupy the entire third floor of the Mechanical Engineering building, 51x69 feet. The third and fourth floors of the tower are also used as a dark room and blue-print room respectively. A good selection of drawings and models in these rooms are of great benefit to the student in his work. These rooms are equipped to accommodate 35 students each, with cases, boards and T-squares for over 200. Students in the Freshman Class are allowed the use of necessary instruments and apparatus free of charge. Members of the Sophomore, Junior and Senior Classes are required to furnish their own drawing instruments. All instruments used by students must be approved by the instructor in charge, an inferior grade of instruments will not be accepted. Students are advised to buy their instruments at the Cadet Exchange, where samples can be seen and wholesale prices obtained.

Our thanks are due to the following named engineering firms for drawings and samples of their work showing the latest and best practice of the day: Robert Poole & Sons, National Tube Works, Jenkins Brothers, Lombard Iron Works, Pratt & Whitney Co., F. E. Reed Co., and many others.

Wood-work

MR. HOOK

MR. GANTT

The course in wood-work does not aim to make the student a skilled workman, but rather to teach the proper use of tools and impress the importance of working to exact dimensions. At the same time, it gives a certain amount of manual dexterity, useful in every vocation.

The course covers two years, beginning with the most elementary principles and advancing gradually by a series of graded exercises to the more complicated constructions where special methods and tools are required. All work is done from working drawings, and commercial shop methods are constantly employed.

Freshman Class

BOTH TERMS.—Names, use and care of tools; graded exercises in carpentry, joining and wood-turning; construction of articles from working drawings; use of turning lathe and other simple machinery; construction of boxes, desks, etc., involving dove-tailing, glueing, polishing; turning of cups, vases, Indian clubs and other wooden articles.

Sophomore Class

BOTH TERMS.—Use of wood-working machinery, as planer, jointer, circular and jig saws. Pattern work, with graded exercises, showing use of draft, halving, core prints and core boxes. Patterns for machines under construction. Advanced cabinet work and furniture construction, as chairs, desks, bookcases, hall stands, and mantels.

Equipment

The wood shop occupies the two-story wing on the east side of the Mechanical Engineering building, 45x100 feet. The lower floor contains the Freshman Class room, equipped with fifteen work benches and sets of tools, six turning lathes, with tools for each, and other tools for hand work. On this floor is also the planing mill machinery, consisting of a double roll planer, power rip and cut-off saws, band saw, scroll saw, 16-inch jointer, moulding machine, mortising machine, tenoning machine, emery grinder, laths with 12-foot bed, etc.

The upper floor is devoted to the work for the Sophomore Class, and is fitted up with fifteen work benches and sets of tools, six 10-inch turning

lathes, one large pattern lathe, one combination saw and boring machine, one double-headed shaper, with a full set of cutters, one power carving machine, jig saw, one Universal trimming machine, special door and sash clamps, steam glue pots, mitre cutters, etc.

The power is supplied by electric motors conveniently located in the various rooms. A large lumber yard and dry-kiln provide seasoned lumber at all times.

Machine Shop

MR. WRIGHT

Junior Class

BOTH TERMS.—Instruction begins at the bench with exercises in chipping, filing, scraping and polishing. Castings and drawings are given the student, and he is required to chip, file, scrape and polish each casting into the exact form and size represented by the corresponding drawing. From bench work the student is advanced to machine work, where he is taught turning, boring, polishing, drilling, threading, planing, milling, grinding, etc., in iron, brass and steel. In all cases the exercises are required to be worked to drawings. The graded course of exercises is designed to teach the fundamental principles and practices of machine metal-work from the simplest to the most difficult operations. After completing this course of exercises, work is begun in the construction of tools, apparatus, etc.

Senior Class

BOTH TERMS.—The Senior year is devoted to more advanced work in the construction of engines, dynamos, motors and other machines. The student is encouraged to work from his own designs as far as possible, but is guided and directed by the instructor in charge.

Equipment

The machine shop is located in the southwest wing of the Mechanical building, which wing is 45x100 feet, well lighted, heated and ventilated.

It contains eighteen benches, with vises, 110 kits of tools and the following machine tools: 1 18-in.x12-foot engine lathe; 1 18-in.x8 foot engine lathe; 3 14-in.x6-foot engine lathes; 4 14-in.x6-foot Lodge & Shipley lathes; 1 10-in.x4-foot F. E. Reed pattern maker's lathe; 1 15-in.x8-foot speed lathe; 1 18-in. drill press; 1 28-in. back geared drill press; 1 22-in.x22-in.x6-foot Powell planer; 1 Cincinnati cutter and tool grinder; 1 15-in. Gould and Eberhardt crank shaper; 1 dry emery grinder; 1 12-in. power hack saw; 1 36in. grind-

stone; 1 22-in. Leland and Faulconer wet emery tool grinder; 1 American twist drill grinder; 2 14-in.x6-foot F. E. Reed compound rest engine lathes; 2 14-in.x6-foot Hendey compound rest engine lathes; 1 10-in. clotting machine, built by New Haven Mfg. Co.; 1 fan; 1 forge. The tool room in connection with the shop contains all tools, etc., necessary for use with the machines.

The 7 H. P. motor which drives the machinery was built by students.

forge and foundry

MR. JOHNSON

MR. GANTT

Freshman Class

BOTH TERMS.—*Forge Work*.—The course in forging begins with instruction in the names of tools, and building and managing fires. Graduated exercises are then taken up, including drawing out, up-setting, bending, punching, twisting, welding of iron, welding of steel, welding of steel and iron, annealing, hardening, tempering, case-hardening, blueing and browning. Some work is then done in ornamental forging. The practical instruction is supplemented, during the progress of the course, by lectures and notes on the principles involved, and the details of the best forge practice are thoroughly explained.

Sophomore Class

BOTH TERMS.—*Foundry Work*.—Students are taught the names and uses of tools; tempering of molding sand; molding and patching of molds. Patterns of various shapes and sizes are used to illustrate the different principles of molding, venting and gating; the use of risers, pressure gates, skim gates, gaggers, chaplets, facing sands; feeding of castings; core-making; grading and mixing of iron; charging and managing the cupola. Several weeks are devoted to work in the brass foundry. The practical instruction is supplemented by a course of lectures.

Equipment

FORGE SHOP.—This is a room 37x60 feet, situated in a wing of the Mechanical building. It is equipped with 18 Buffalo down draft forges and steel-faced anvils, with sets of hammers, tongs, swages, fullers, flatters, etc. Continuous blast is furnished by a Buffalo blower driven by a 15 H. P. electric motor, the down draft being produced by a 60-inch Buffalo exhaust fan. The shop is

also supplied with vises, swage blocks, emery wheel, bending cone, drill-press, bolt shear, &c.

FOUNDRY.—This building has recently been enlarged to meet the growing demands of the College, and now occupies a space 43x76 feet. It is equipped with a 26-inch Victor Collian cupola, a Millett's improved core oven, a two-ton post crane, 8 improved moulder's benches, an 18-inch brass furnace, with its usual complement of crucibles, tongs, etc., full sets of moulder's tools for the accommodation of 20 students, besides the usual accessories to the foundry, such as ladles, flasks, etc.

Mathematics

PROFESSOR BRODIE

ASSISTANT PROFESSORS WALLER, MARTIN, REAVES, SHANKLIN

This course presupposes a thorough knowledge of arithmetic and of algebra through quadratics.

Freshman Class

FIRST TERM.—*Algebra*.—Quadratics (reviewed) ; simple indeterminate equations ; inequalities ; theory of exponents, logarithms ; proportion and variation ; series binomial theorem.

Text-book—Wentworth's Complete Algebra.

SECOND TERM.—*Plane Geometry*.—Rectilinear figures ; circles ; similar figures ; comparison and measurement of surfaces of polygons ; regular polygons and circles. Special attention is given to the formation, on the part of students, of the habit of clear and accurate reasoning and concise expression.

Text-book—Wentworth's Geometry.

Sophomore Class

FIRST TERM.—*Solid Geometry*.—Planes and solid angles ; polyhedrons ; cylinders and cones ; spheres, spherical polygons and pyramids ; volume.

Higher Algebra.—Continued fractions ; theory of limits ; undetermined co-efficients ; exponential theorem ; equations in general.

Text-books—Wentworth's Geometry and Wentworth's Complete Algebra.

SECOND TERM.—*Trigonometry*.—Measurements of angles ; trigonometric functions ; right triangle ; goniometry ; relations between functions of one angle ; functions of multiple angles ; inverse func-

tions; trigonometric equations; oblique triangles; De Moivre's theorem; spherical trigonometry; general formulas; right spherical triangle; oblique spherical triangle; applications.

Text-book—Wentworth's Trigonometry.

Descriptive Geometry.—Study of the representation of points, lines, planes, surfaces and solids, and of their relations; tangencies, intersections and developments; shades, shadows and perspective; numerous original exercises.

Text-book—Low's Practical Solid or Descriptive Geometry.

Plane Surveying.—This course includes the general principles and fundamental operations of surveying with compass, level and transit. The field work includes actual surveys of tracts of land, of which the areas are computed and plats are drawn. Experience is given in numerous problems of laying out and dividing up land, and in locating irregular boundaries. Practice is also had in section leveling, laying out terraces, ditches, etc. Ample training is here furnished for the needs of agricultural students, and a preparation is given for the higher work of the engineering courses.

Text-book—Davies-Van Amringe's Surveying.

Students in the Textile Course do not take surveying. Students in the Agricultural Course take no mathematics beyond the Sophomore year.

Junior Class

FIRST TERM.—*Analytic Geometry*.—Cartesian and polar systems of co-ordinates; discussion and construction of loci; the straight line; transformation of co-ordinates; circle; parabola; ellipse; hyperbola; general equation of second degree involving two variables; higher plane curves; solid analytic geometry; system of co-ordinates; equation of the plane; the straight line in space; transformation of co-ordinates; surfaces of the second order.

Text-book—Tanner and Allen's Analytic Geometry.

SECOND TERM.—*Differential Calculus*.—Differentiation of algebraic functions; transcendental functions; successive differentiation and development of functions; functions of two variables; tangents and asymptotes; maxima and minima; radius of curvature; evolutes and involutes; envelopes.

Integral Calculus.—Elementary forms of integration; rational fractions; integration of irrational fractions; successive reduction; integration of functions of two variables; lengths of curves; areas of

plane curves ; rectification of curves ; cubature of volumes.

Text-book—Taylor's Differential and Integral Calculus.

Civil Engineering

(Included in the Department of Mathematics.)

To begin the work in Civil Engineering the student must have completed the mathematical course through trigonometry and plane surveying. For the Senior course he must have a working knowledge of analytical geometry and calculus.

Junior Class

BOTH TERMS.—Use and adjustment of transit, stadia, solar, compass and plane-table ; topographic surveying with transit and stadia ; railroad topography ; triangulation ; geodesy ; city and hydrographic surveying ; map and plan drawing, topographical symbols, etc.

Highway Engineering.—Location, construction and maintenance of the country roads and city streets ; advantages of various materials for road covering ; effects of grades and surface upon the cost of transportation ; plans and specifications ; practical problems in change of grade and relocation, from surveys of existing roads.

Theory of Railway Construction.—Preliminary and location surveys ; location from contour map ; laying out of simple and compound curves ; setting of slope stakes ; computation of earthwork ; switches ; turnouts ; theory of economic location ; effects of grades, curves and length upon the cost of operation.

Text and Reference Books—Johnson's Higher Surveying ; Gillespie's Roads and Railroads ; Burne's Highway Construction ; Carhart's Field Engineering ; Wellington's Economic Location.

Senior Class

BOTH TERMS.—*Railway Engineering*.—Surveys are made for a line of railway a mile or more in length ; the necessary plans, profiles and cross-sections are prepared ; grades are determined, curves laid out, slope stakes set, and all the needed measurements made to enable the student to compute the excavations and embankments, and to estimate the cost of construction.

Surveys of Water Powers.—Discharge of stream, head and avail-

able power; form and dimensions of pond or reservoir; detailed topography of site for dam and determination of its form and dimensions for stability.

Geodesy.—Method of least squares; precise triangulation; base lines; precise leveling; azimuth by solar transit, by polaris and by altitude of the sun; measurement of meridian arcs; the earth as a spheroid; the earth as an ellipsoid; history of geodesy.

Structures.—Building materials; mechanics of construction; derivation of practical formulas; masonry; foundations on land and in water; stability of walls and arches; analytical and graphical investigation of stresses in plate girders, Howe, Pratt, Warren and other types of highway and railroad bridges, and various forms of roof trusses; bridge design.

Text-books—Wheeler's Civil Engineering; Merriman and Jacoby's Roofs and Bridges; Merriman's Geodesy.

Equipment

The collection of field instruments contains the following: Two 6-inch vernier compasses; 20-inch wye level; engineer's transit, with solar attachment and stadia; plane-table, with 9-inch telescope, vertical circle and stadia; drainage level; 12-foot self-reading leveling and stadia rod; 12-foot New York leveling rod; 10-foot cross-section rod, graduated; Gurley's clinometer, reading to degrees; two surveyor's chains; engineer's chain; standard 100-foot steel tape, graduated to hundredths of a foot; and full supply of ranging poles, flag poles and other accessories. There are also sets of drawing instruments for office work.

In addition to the drawing done under the immediate direction of the instructor in this division, the regular work in drawing and designing provided for civil engineering students is arranged with special view to their needs.

English

PROFESSOR FURMAN

ASSISTANT PROFESSORS McLUCAS, DANIEL, BRYAN

The purpose of the course in English is to enable the student to acquire the power to express his thoughts with clearness, precision and force; and to cultivate in him a taste for good literature. Elementary English grammar and the rudiments of composition are taught in the Subfreshman classes.

Freshman Class

Lockwood's Lessons in English; Strang's Exercises; readings from Irving and Scott; exercises in composition; supplementary readings.

Sophomore Class

Clark's Practical Rhetoric; weekly exercises in composition; supplementary readings.

Junior Class

Pancoast's English Literature; Hawthorne and Lemmon's American Literature; critical study of Macauley's Warren Hastings; monthly essays; supplementary readings.

Senior Class

Study of Shakespeare; Dowden's Primer and the reading of three plays; advanced rhetoric; monthly essays; supplementary reading; exercises in elocution.

History

PROFESSOR MORRISON

The course in History includes History of the United States, South Carolina History, General History, Commercial Geography, Civics, and Political Economy.

The method of instruction is a combination of the text-book and lecture methods, with parallel readings, under the instructor's direction as far as practicable. The class-room is supplied with globes, charts, maps and works of reference, in the use of which the young men are carefully trained. The students make liberal use of the many volumes of poetry, historical romance, biography and history found in the College Library.

The History of South Carolina and the History of the South receive special attention. "A people which takes no pride in the noble achievements of a remote ancestry will never achieve anything worthy to be remembered by remote descendants." Every effort is made to enable the young men to see and feel as their fathers and forefathers saw and felt.

Text-books—Eggleston's History of the United States and its People (Subfreshman); Weber's History of South Carolina and

Tilden's Commercial Geography (Freshman) ; True and Dickinson's Our Republic (Sophomore) ; Anderson's New General History (Junior and Senior) ; Walker's Political Economy—Briefer Course (Senior).

Military Science and Tactics

Junior and Senior Classes

BOTH TERMS.—The course in military instruction, as prescribed and followed, is both theoretical and practical. The theoretical instruction, given by recitation and lecture, includes the subjects of organization and administration, grand and minor tactics, logistics, castramentation, military engineering, gunnery and pyrotechnics, military history, etc. The practical instruction includes infantry drill, in the school of the soldier, the company, the battalion and the evolutions of the regiment, in both close and extended order, target practice and guard duty, and in the manual of the piece in light artillery drill. Practice is also given in signaling with the flag.

In addition to the benefit which the general government derives from the military instruction given at this and other colleges, it is believed that the discipline enforced, the habits of punctuality and obedience inculcated, the improvement in bearing and appearance of those instructed, and also the practice in directing and commanding others, which nearly all in course of time get, is of immense benefit to the students individually.

Textile Industry

PROFESSOR BEATY

MESSRS. FRISSELL, RAIFORD, PARKER

The instruction in this department is given in two separate courses of study.

Regular Textile Course

This course comprises a system of liberal education and culture as a part of the textile training. The object has been to arrange a course in which students will not only be given special knowledge of textile subjects, but will at the same time and along with this special training receive the advantages of a good general education.

The first two years of the course are the same as those of the Me-

chanical Department, and are devoted to the study of general principles which underlie the sciences involved in manufacturing. The third and fourth years of this course consist in a study of the materials, processes, machinery and apparatus used in modern manufacturing, from those used in the production of plain coarse fabrics, to those used in the production of fine and elaborate, fancy colored fabrics. The method of instruction, in the two courses, is practically the same, and individual instruction is given in every instance where circumstances will permit.

Special Textile Course

This course has been arranged to meet the demands of mature young men, who already have a good general education. It consists of as many hours of theoretical and practical training, in the mill processes, as the other two courses, but additional time is devoted to the subjects of dyeing, bleaching, etc.

The examination of applicants will be at the College at the beginning of each fall term. For admission to this course it is required that the student be proficient in Mathematics, English, History, Physics, General Inorganic Chemistry and Qualitative Analysis as completed in the Sophomore year at this College. Students taking this course will not be subject to military duty and will not be required to live in barracks.

DETAILS OF INSTRUCTION.—In carding and spinning, after the subject of raw material has been completed, machinery and processes used in the production of cotton yarns will be taken up systematically, going into a detailed examination and explanation of the separate machines and the mechanisms peculiar to them. Calculations for making changes of gears, speeds, production, etc., and practical operation of each machine will be required.

In designing instruction begins with explanations of the principles of representing weaves on design paper, after which the designing of plain simple weaves, laying out of harness drafts, pegging plans, etc., is taken up, and advancing into the designing of more complicated weaves usually made on harness. After the completion of harness weaves the time will be devoted to designing of Jacquard weaves and tying-up of Jacquards. The aim of the instruction in designing will be to develop originality in the student.

The practical work in weaving is laid out to parallel the instruction

in designing. The first part of the instruction in this work will be on hand looms. After the completion of that amount of work required on hand looms the student is advanced to plain and fancy power looms, where in addition to the practical operation of weaving, the loom will be analyzed and explained in detail, together with timing and setting all working parts. The latter part of this work will be on Jacquards.

Cloth analysis consists in dissecting samples of various kinds of cloth to ascertain the weave, texture, weight per yard and the counts of yarn used in its construction. The students are required to reproduce some of these patterns on the looms in the school.

The work in textile chemistry and dyeing covers inorganic quantitative analysis; the general principles of organic chemistry, with special reference to the coloring matters; the preparation of mordants and dyes, and the application of the latter to the several textile fibres.

This is accomplished by means of lectures, accompanied by experiments, written exercises and individual laboratory work, together with practical dyeing in the dye-house. Care is taken to develop accuracy in observation, neatness and clearness in written reports; and to this end each student is required to submit a comprehensive report—including the necessary notes and references from standard works on the subject—of every experiment performed by him. By this method each student is able to verify for himself in the laboratory, the truth of the principle stated to him in the class room.

Carding and Spinning

RAW MATERIAL.—That the manipulation of cotton fibres may be carried out successfully, under various conditions, it is essential that the characteristics peculiar to the cotton fibre should be understood. Therefore, the introductory work of the students of this department is to examine the physical and chemical properties of cotton fibres, to ascertain their lengths of staple, spinning qualities, color, harshness and softness, and to determine their suitability for making various kinds of yarn, filling, warp, ply yarns, &c. This study of fibres will not be limited to American cottons, but will include the more important commercial cottons of the world. The effects of temperature and humidity on fibres will be fully discussed. Also the handling of cotton, prior to manufacturing processes, together with the injury to cotton fibres therefrom.

OPENING AND MIXING.—Beneficial effects of opening and airing cotton; length of time to air for best results; effects on resultant yarn if not properly opened; necessity of mixing; when to mix cottons and methods of carrying out same; effects of improper mixing; effects of a judicial mixing on the after processes of manufacture; reasons for blending; effects of blending cottons on the resultant yarn, for strength, appearance, cost, etc.; effects on finished products if cottons are not properly mixed or blended.

PICKER ROOM.—Proper situation of picker room; arrangement of machinery in same; automatic feeder; purpose for which used; construction, adjustment of parts, etc.; action on cotton; manner of connecting them to breaker lappers with and without dust trunks; advantages of dust trunk; facilitating good results by proper care; breaker lapper, use, explanation of parts, beaters used, adjustment of working parts and experimenting with different speeds of beater; intermediate and finished lappers, necessity of using same, construction, speeds, care of beaters, kinds of beaters, speeds of beaters for different lengths of staple; evener motion and its control of feed rolls; adjustment of grids to regulate amount of waste, disposition of waste; regulation of air current; effects of air current on proper working of the lapper; lap formation; calculation on above machines for drafts, length of lap, etc.

CARDING.—Purpose of carding; principle upon which cards are built; comparison of types of cards; explanation of purpose and construction of feed plate, licker-in, cylinder, flats, screens, doffer, coiler head, etc.; different settings of card to produce best results on different lengths and qualities of fibre; regulation of waste; amount of draft; grinding; effects of improper grinding on card clothing and fibre; calculations for changing gears and speeds of various working parts.

COMBING.—Sliver lap machine, its construction, use, etc.; care and operation; leather covered rolls, metallic rolls; ribbon lap machine, its construction, use, etc.; advantages of using same; care and operation; lap formation; combing machine, its use, care and operation; detailed explanation of working parts, cylinder, half laps, segments, detaching rolls, etc.; with rules for adjusting and timing same; regulation of waste made; necessity of the process; relation of the process to fine smooth yarns; practical experience in adjusting above machines; calculations for change gears, etc.

RAILWAY HEADS AND DRAWING FRAMES.—Purpose, use, construction, advantages and disadvantages of railway heads; explanation of stop motions, evener; principle of drawing slivers; purpose of drawing frame; comparing work of leather covered and metallic rolls; adjustment of rolls; distribution of draft between the rolls; speeds, stop motions; all calculations on above machines, drafts, production, etc.

FLY FRAMES.—Slubber, intermediate, fine roving and jack frames; construction, care and operation of the modern fly frame; bobbin and flyer lead machines; advantages of the bobbin lead; detailed explanation of working parts, differential motion, horse head, builder, full bobbin stop motion, etc.; adjustment of drawing rolls; calculations for draft, twist, lay, tension and other gears.

SPINNING BOTH ON FRAMES AND MULES.—Construction and use of the ring spinning frame; its principal parts, such as rings, spindles, travelers, builder motion, etc.; the effect of twist on the strength, color and elasticity of the yarn; calculations; the spinning mule and its uses; special features; description of the head stock, cam shaft, and other parts; the copping rail and formation of a cop; different movements in the mule and timing of the same; calculations.

MISCELLANEOUS.—Reelings; bundling; twisting; doubling; spooling, warping, etc.; calculations and information regarding each process.

SLASHING.—The slasher, construction and use; necessity for slashing; creel, cylinders, size boxes, etc.; mixing of size; different sizing ingredients for special purposes; methods of preparing warps for the slasher.

Weaving

DESIGNING.—Purpose of designing; explanation of “warp” and “filling;” representing weaves on design paper; foundation weaves; plain or cotton weave; weaves derived from plain weaves, such as rib and basket weaves; twill weaves and method of construction; derivative weaves from twills, such as broken, steep, skip, reclining and curved twills; corkscrew twills; entwining twills; satin weave and the purpose of same; weaves derived from satins, such as double satins and granites; shading of satins; figured effects produced by using warp and filling satins; color effects produced by using two or more colors in the above fabrics; methods of constructing granite

weaves; points to be considered in combination weaves; special weaves; honey combs, gauze and imitation gauze, bedford cord, plain and fancy piques, matelasses, etc.; two systems of warp and one system of filling or two systems of filling and one system of warp for the purpose of figuring; explanation of double cloth, purpose and class of fabrics in which generally used; representing double cloth weave on design paper; use of different proportions of "back" and "face" for special effects; method of stitching double cloth so that the stitching will produce a figured effect; stitching so that it will not show either on "face" or "back" of cloth; leno weaves and method of representing on design paper; methods of making drawing-in drafts, chain drafts; plain and fancy drafts; point, skip, mixed or cross draws; rules for finding the number of heddles required for each harness; methods used in reducing weaves to the lowest number of harness.

JACQUARD DESIGNING.—Explanation of the various Jacquard machines; methods of shedding, such as, the rise and drop, single lift, double lift machine; single and double cylinder machine; open and closed shed machine; drawing of tie-ups, straight tie-up both in French and English, point tie-up, combination tie-up for special goods as table damask, marseilles quilts, etc.; practical operation of tying-up a Jacquard, cutting leashes, threading of comber board, tying on and leveling up mail eyes; figuring comber board for a given texture of goods; casting out hooks to reduce texture of goods without retying the harness; cutting and lacing cards for a given design; selection of design paper for different fabrics, with regard to picks and ends per inch used; methods used in laying out the figure for a Jacquard design; enlarging the sketch for design paper, etc., etc.

CLOTH ANALYSIS.—Methods of arranging cloth sample for analysis; figuring the counts of cotton, woolen, worsted and silk yarns; calculations for converting one system of yarns into that of another; finding the weight of cloth per yard and the counts of yarn used in its construction from the analysis; figuring width of warp in reed and number of reed to use to produce a given width and texture when woven.

This work takes up all representative classes of weaves that can be woven on harness, and gives the student a thorough knowledge of figuring yarns, weight of cloth, ends and picks per inch, etc.

HAND LOOM WEAVING.—The first practical work in weaving is on

the hand loom. These hand looms have 4x4 box motion and 30 harness dobbies. After the design and necessary calculations have been made the student proceeds with dressing, drawing-in, reeding, tying the warp in loom, building harness chain and starting up loom; producing different weave effects from the same drawing-in draft by changing the harness chain; using box motion for color effects; combining two or more systems of filling with one system of warp, two or more systems of warp with one system of filling, two or more systems of warp with two or more systems of filling to produce figured fabrics of a special character; explanation of the different methods used in raising and lowering the harness.

POWER LOOM WEAVING.—Power loom weaving will be taken up after the student has finished the required amount of hand loom work, and will include explanation of plain or cam loom; cam motions used for raising and lowering the harness, such as the under cam, side cam, top cam, etc.; setting cams; sketching cams to produce a given motion; arrangement of strapping for two, three, four and five harness; timing cams to suit the number of harness used; speed of different width looms on the same class of fabrics; selection of temples and measurements for same; Draper loom; warp stop motion, filling change mechanism, etc.; the dobby analysed and explained; methods of shedding; head motions; harness chains for single and double index dobbies; chains for head motions; explanation of box motions, four by one, four by four box, etc.; building box motion chains; explanation of multipliers used on box motions and harness motions; let-off motions, Morton, Bartlett, Sheppard and friction let-offs; open and closed shed machines explained; single and double index dobbies, etc.

Textile Chemistry and Dyeing

JUNIOR YEAR.—Inorganic quantitative analysis, including the examination of such chemicals as are of special importance in dyeing. The carbon compounds or organic chemistry. Lectures with experiments, written exercises. The course in organic chemistry is designed to cover the general principles of the subject, to introduce the student to the scientific method and to prepare him for a detailed study of the compounds dealt with later. The instruction is sufficiently broad to be a commentary upon whatever preliminary training

in chemistry the student may have had, and to serve as an introduction to the work of the Senior year.

SENIOR YEAR.—Organic chemistry with special reference to the coloring matters. This work includes a series of graded exercises in the preparation and testing of organic compounds immediately related to the coloring matters, and the production of some of the typical colors themselves; the whole so selected as fairly to represent the methods made use of in the preparation of what are known as “coal tar dyes.” Thus the student is familiarized with the operations by which the crude products found in coal tar are separated, purified and finally converted into such substances as those used by the dyer. Care is taken to develop accuracy in written reports; and to this end each student is required to submit a comprehensive report of every experiment performed by him.

DYEING OF TEXTILE FABRICS.—This includes an examination of the physical and chemical properties of the various fibres; bleaching of cotton in the form of yarn and cloth; mercerization of cotton; scouring of wool; purification of supply and refuse waters of bleacheries, dye-houses, etc.; application of natural and artificial coloring matters to cotton, wool and silk; calico printing. Instruction is given by means of lectures, experimental work in the laboratory, practical work in the dye-house. Students are required to preserve, on paper prepared for this purpose, samples of such material experimented with, accompanied by the necessary notes for future reference.

Building and Equipment

The building is a capacious brick structure, 168 by 75 ft. The left wing is two stories, the right wing, three stories, high. Although the building was designed especially for educational and experimental work, yet it retains the more prominent features of a modern mill.

The building is well equipped with complete systems of steam heating, humidifiers, shafting, automatic sprinklers, etc., all of which are installed in the most approved manner, from plans furnished by experienced mill engineers.

The equipment consists of: A system of “Vortex” humidifiers from the American Moistening Co.; system of steam heating, and automatic fire sprinklers, from The D. A. Tompkins Co.; shafting, hangers and pulleys, from Jones & Laughlin, Limited, and from T. B. Wood’s Sons; one 22-kw. electric motor from the Westinghouse Electric Company; two 15-kw. electric motors from the General Electric Company.

Carding Department

PICKERS—

One Atherton Automatic Feeder; one Atherton Combination Breaker and Finisher Lapper, with evener motion.

CARDS—

One Saco and Pettee 40-in. Revolving Flat Card; one Mason 40-in. Revolving Flat Card; two Entwistle Traverse Wheel Grinders; two Entwistle Drum Grinders; Stripping and Burnishing Rolls; complete set Carder's Tools.

COMBING—

One Mason Silver Lap Machine; one Mason Ribbon Lapper; one Mason Combing Machine.

RAILWAY HEADS—

One Saco and Pettee Railway Head, with evener motion, stop motion, and metallic rolls; one Mason Railway Head, with evener motion, stop motion, and metallic rolls.

DRAWING—

One Saco and Pettee Drawing Frame, deliveries, stop motion, and metallic rolls; one Mason Drawing Frame, 4 deliveries, stop motion, and metallic rolls.

FLY FRAMES—

One Saco and Pettee 40-Spindle Slubber, with latest improved differential motion; one Saco and Pettee 60-Spindle Intermediate Roving Frame, with latest improved differential motion; one Saco and Pettee 80-Spindle Fine Roving Frame, with latest improved differential motion.

Spinning Department

RING SPINNING—

One Saco and Pettee Combination Warp and Filing Ring Spinning Frame, 128 spindles; one Mason Combination Warp and Filling Spinning Frame, 112 spindles; two Fales and Jenks Combination Warp and Filling Spinning Frames, 80 spindles each.

MULE SPINNING—

One Mason Spinning Mule, 120 spindles, 1 3-4 gauge, with all latest improvements.

SPOOLING—

One Draper Spooler, 40 spindles; one Saco and Pettee Spooler, 72 spindles.

TWISTING—

One Draper Combination Wet and Dry Twister, 48 Spindles; one Fales & Jenks Wet Twister, combined Filling and Taper Top wind, 70 Spindles.

WINDING—

One W. W. Altemus & Son Bobbin Winder; one Atwood-Morrison Co. Bobbin Winder; one Geo. W. Payne & Co. Skein Winder.

REELING—

One D. A. Tompkins Co. Adjustable Reel, 50 Spindles.

WARPING—

One Draper Warping and Creel.

BEAMING—

One Entwistle Beaming Machine.

Weaving Department

HAND LOOMS—

Hand Loom Weave Room fully equipped with 4x4 box looms, fitted with 30 Harness Shedding Engines for fancy Cottons. Also Drawing-in Frames, Warping Frames, Beaming Frames, etc.

POWER LOOMS—

One 40 Northrop Loom, with warp stop motion and automatic filling magazine; one 28 Northrop Loom, with automatic filling magazine and Stafford 20 Harness Dobby; one Mason, 4x1 box, Gingham Loom; one Mason Loom, 1x1 box, 46-in. Reed Space, with Stafford 20 Harness Dobby; one Mason Fancy Cotton Loom; one Stafford Fancy Cotton Loom, 20 Harness Dobby, with Leno attachment; one Knowles Light Fancy Loom, "Gem" 30 Harness, 40-in. Reed Space, 4x4 box; one Kilburn & Lincoln Loom, 42-in. Reed Space, 4x1 drop box, arranged for Dobby; one Kilburn & Lincoln Loom, 42-in. Reed Space, 2x2 drop box, arranged for Dobby; one Stafford Dress Goods Loom, with Stafford 400 Hook, Single Lift, Swing Cylinder, Jacquard; one 624 Hook Jacquard Machine Tied for Weaving Damask, mounted on a Crompton, 4x1, drop box Loom.

JACQUARD CARD CUTTING—

One Jno. Royle French Index Foot Power Card Cutter.

Textile Chemistry and Dyeing

The work in Textile Chemistry and Dyeing is carried on in an experimental laboratory and a practical dye-house. These are equipped with the necessary apparatus and chemicals for instruction in organic chemistry, scouring, bleaching, dyeing, etc.

The experimental laboratory is situated on the second floor, in left wing of the textile building, and is fitted with appropriate work-tables furnishing accommodations for sixty-four students working by detachments. Each table is supplied with the necessary arrangements for gas and water, and a drawer and locker in which work may be preserved until it has been examined by the instructor.

The dye-house is situated in the right wing of the textile building, and is fitted up with the necessary apparatus for dyeing larger quantities of material than those operated with in the experimental laboratory.

The School is equipped with Reels, Yarn, Testers, Analytical Balances, and all necessary instruments for experimental purposes.

Departmental Library

For the use of students and instructors, a room in the textile building has been fitted up and is being furnished with the more important books of reference relating to the textile industry. New books are being added constantly. Here are also kept the leading periodicals relating to the subject. The room will open every week day throughout the session.

Donations

The following donations are acknowledged with thanks:

The A. T. Atherton Machine Co., Pawtucket, R. I.—One Automatic Feeder; one Combination Breaker and Finisher Lapper; one lot of Lap Rods.

Saco & Pettee Machine Co., Newton Upper Falls, Mass.—One 40-in. Revolving Top Flat Card; one Entwistle Traverse Grinder; one Entwistle Drum Grinder; one Burnisher; one set Carder's Tools; one improved Railway Head, with back, front and full cam stop motion; one 4 Delivery Draw Frame, with back, front and full cam stop motion, fitted with single preventer rolls; one 40 Spindle Slubber; one 60 Spindle Intermediate Roving Frame; one 80 Spindle Fine Roving Frame; one 128 Spindle Combination Warp and Filling Ring Spinning Frame; one 72 Spindle Improved Spooler. A sufficient number of gears were sent with these machines to make various changes that may be necessary.

Mason Machine Works, Taunton, Mass.—One 40-in. Revolving Top Flat Card; one Entwistle Drum Grinder; one Stripper Brush; one set Carders' Tools; one Railway Head, with back, front and full cam stop motion; one 4 Delivery Draw Frame, with back, front and full cam stop motion, fitted with single preventer roll; one 112 Spindle Combination Warp and Filling Ring Spinning Frame; one 40-in. Plain Loom; one 36-in. Fancy Cotton Loom; one 36-in. 24 Harness Dobby Loom. All necessary gears with these machines to make the required changes.

Half Value on Combing Machinery

The D. A. Tompkins Co., Charlotte, N. C.—One Adjustable Reel; one Draw-in Frame; one Loom Box; one Doffer Box; two Section Beams; one Switch Board, complete.

Draper Co., Hopedale, Mass.—One 40-in. Northrop Loom; one 28-in. Northrop Loom; one 48 Spindle Combination Wet and Dry Twister; one 40 Spindle Spooler; one Warper, with Creel; four Section Beams; Temples as required; Loom Findings.

Crompton & Knowles Loom Works, Providence, R. I.—Half value on following:

One 32" Loom, with 416 hook Jacquard; one 32" Loom, with Leno attachment; one 65" 4x1 Box Loom, with 624 hook Jacquard; one 36" Knowles "Gem" Loom.

Jones & Laughlin Co., Limited, Pittsburg, Pa.—The entire original equipment of Shafting, Hangers and Pulleys.

T. B. Wood's Sons, Chambersburg, Pa.—One-fourth value on equipment of Shafting, Hangers and Pulleys used in new extension of building.

Southern Railway Co.—Half freight rates, over their lines, on entire original equipment of machinery.

Schaum & Uhlinger, Philadelphia, Pa.—One Top Engine Drive, self-balancing, hydro-extractor.

The Metallic Drawing Roll Co., Indian Orchard, Mass.—Metallic Drawing Rolls for Railway Heads and Draw Frames as required.

Westinghouse Electric Co., East Pittsburg, Pa.—One 220 Volt Direct Current Motor.

The Aerophor Co., Boston, Mass.—Complete system of "Vortex" Humidifiers, including pump, tank and connections.

T. C. Entwistle, Lowell, Mass.—Half value on one Beaming Frame.

Fales & Jenks Machine Co., Pawtucket, R. I.—Two Combination Warp and Filling Spinning Frames, 80 Spindles each; one Wet Twister, combined Filling and Taper Top Wind, 70 Spindles.

Kilburn & Lincoln Co., Fall River, Mass.—Two Cotton Looms, 42-in. Reed Space and arranged for Dobbies.

W. W. Altemus & Son, Philadelphia, Pa.—One Bobbin Winder.

New Bedford Paper Co., New Bedford, Mass.—Caps, Cones, Tubes, etc., as required.

Charlotte Supply Co., Charlotte, N. C.—All belting as required.

American Supply Co., Providence, R. I.—Heddles, Heddle Frames, Reeds and Loom Supplies as required.

Loom Picker Co., Biddeford, Me.—Loom Supplies.

The Emmons Loom Harness Co.—Cotton Harness, Reeds and Loom Supplies.

Sykes & Street, New York, N. Y.—Collection of Dye Stuffs.

New York and Boston Dyewood Co., New York, N. Y.—Collection of Dye Stuffs.

Victor G. Bloede & Co., Baltimore, Md.—Collection of Dye Stuffs and Mordants.

Wm. J. Matheson & Co., New York, N. Y.—Collection of Dye Stuffs.

Wm. Pinkhardt & Kutroff—Collection of Dye Stuffs.

Roney & Rae Co., Woonsocket, R. I.—Twelve Bobbin Holders.

Steel Heddle Manufacturing Co., Philadelphia, Pa.—2,500 Patented Flat Steel Heddles.

L. T. Houghton, Worcester, Mass.—Four Steel Thread Boards with Hardened Steel Thread Guides.

Specimen Entrance Examinations

The following questions represent typical examinations for entrance to the Freshman Class. They will be found useful in suggesting the character of preparation that an applicant should have.

Mathematics

For admission to the Freshman Class, thorough proficiency is required in arithmetic, and in algebra through simple affected quadratics. Following is a type of the entrance examination in algebra:

I. Simplify:

$$2x^3(x-3a)-2[2x^4-a^2(x^2-a^2)]-3a[x^3-2x\{a^2+x(a-x)\}+a^3].$$

II. Divide:

$$12x^{5n-3}-x^{4n-2}-20x^{3n-1}+19x^{2n}-10x^{n+1} \text{ by } 4x^{2n}-3x^{n+1}+2x^2.$$

III. Reduce to its simplest form:

$$\left(\frac{x^3-8y^3}{x(x-y)} \right) \left(\frac{x^2-xy+y^2}{x^2+2xy+4y^2} \right) \div \left(\frac{x^3+y^3}{x(x^2-y^2)} \right)$$

IV. What is the value of x in:

$$\frac{6-5x}{15} - \frac{7-2x^2}{14(x-1)} = \frac{1+3x}{21} - \frac{2x-2\frac{1}{5}}{6} + \frac{1}{105}$$

V. Solve x , y and z .

$$\left\{ \begin{array}{l} 3x-4y=6z-16 \\ 4x-y-z=5 \\ x=3y+2(z-1) \end{array} \right\}$$

VI. What values for x and y will satisfy:

$$(a-b)x+(a+b)y=2(a^2-b^2) \text{ and } ax-by=a^2+b^2?$$

VII. If $\frac{2}{3}$ be added to the numerator of a certain fraction, the fraction will be increased by $\frac{1}{21}$, and if $\frac{1}{2}$ be taken from its denominator, the fraction will become $\frac{2}{3}$. What is the fraction?

VIII. Solve for x :

$$\sqrt{a+\sqrt{x}} + \sqrt{a-\sqrt{x}} = \sqrt{x}$$

IX. Find the 6th root of:

$$1+6x+x^6+6x^5+15x^4+20x^3+15x^2.$$

X. Solve for x :

$$\frac{2x+1}{7-x} + \frac{4x+1}{7+x} = \frac{45}{49-x^2} + 1.$$

History

- I. Tell of Raleigh's expeditions: 1. How many. 2. Where. 3. Results.
- II. Name and briefly describe three early Indian wars.
- III. Name Colonial wars between England and France. State general results.
- IV. Name the thirteen colonies and tell the kind of government each had at the outbreak of the Revolution.
- V. What cities have been the capital of the United States?
- VI. Tell of the successes of our navy in the War of 1812: 1. At sea. 2. On the lakes.
- VII. Tell of the Mexican War: 1. Causes. 2. Campaigns. 3. Results.
- VIII. Name six accessions to our territory.
- IX. Name three great American inventors and tell their inventions.
- X. Name two American poets and two novelists. Mention a work of each.

English

NOTE.—Those students who have formed the habit of reading good literature usually pass the examination with most ease. Reading books by good authors is conducive to correctness and ease of expression. It is urged, therefore, that each applicant see to it that he is familiar with several books by reputable authors. It is not intended to require that certain books shall have been read, but the following are mentioned as suggestions:

DeFoe's Robinson Crusoe, Swift's Gulliver's Travels, Hughes' Tom Brown's Schooldays, Cooper's Last of the Mohicans, Scott's Ivanhoe, Dickens' Oliver Twist, Dickens' History of England, Goldsmith's Deserted Village; Longfellow's Evangeline.

- I. SPELLING. (Fifty common words difficult to spell.)

Group, salmon, mahogany, fierce, cataract, valise, muscle, twelfth, seize, onion, February, carrot, million, banana, pumpkin, neuter, heifer, salad, mystery, excel, pallid, bosom, lithe, gallop, wizard, pommel, swollen, cyclone, exhaust, partridge, tenement, exhibit, robin, bureau, luscious, rabbit, judgment, label, peaceable, succeed, colonel, vengeance, transferable, penitentiary, piteous, criticise, analyze, inseparable, independent, abstinence.

- II. READING. Read aloud distinctly and intelligently a short passage from some ordinary prose.

- III. WRITING. Write a composition of one page on some easy subject; such as, "Why I Wish to Go to College," "My Previous Educational Advantages," "A Picture of My Home," "A Runaway." (In this you will be graded on penmanship, grammatical correctness, ability to say what you intend, and general neatness.)

- IV. GRAMMAR. (The analysis of the sentence is regarded as more important than the parsing of words.)

1. Give the principal parts of the following verbs:

Swim, wake, burst, sink, swing, drink, see, attack, cling, eat.

Type Class Examinations

Junior Calculus Examination June, 1901

Professor Brodie

I. If $y = \sin(\sin x)$ prove

$$\frac{d^2 y}{dx^2} + \frac{dy}{dx} \tan x + y \cos^2 x = 0.$$

II. Show that the curve $y = \sin^3 x \cos x$ has its maximum ordinate when $x = \frac{\pi}{3}$

III. The top of a column which sustains a statute 11 feet high is 25 feet above the level of a man's eye. Find his horizontal distance from the column when he sees the statute subtending the greatest angle.

IV. Prove :

$$\int \frac{(2x^3 + 7x^2 + 6x + 2)dx}{x^4 + 3x^3 + 2x^2} = \log \left[x(x+1) \left(\frac{x}{x+2} \right)^{\frac{1}{2}} \right] - \frac{1}{x}$$

$$V. \int \frac{x^{1/3} dx}{x^{1/2} + 2x^{2/3}} = \frac{3}{4}x^{2/3} - \frac{1}{2}x^{1/2} + \frac{3}{8}x^{1/3} - \frac{3}{8}x^{1/6} + \frac{3}{16} \log(1 + 2x^{1/6})$$

$$VI. \int \sin^8 x dx = \frac{1}{16} \left[\frac{35x}{8} - 4 \sin 2x + \frac{2}{3} \sin^3 2x + \frac{7}{8} \sin 4x + \frac{\sin 8x}{64} \right]$$

VII. Explain and find value to four terms of $\int \frac{\cos x dx}{x}$ VIII. Find total length of the hypocycloid whose equation is $x^2_3 + y^2_3 = a^2_3$.IX. The figure bounded by $x=a$ and the parabola $y^2=4px$ is revolved about the line $x=a$. Show that the volume generated is $\frac{1}{15}(32\pi a^2 \sqrt{pa})$.

X. Prove :

$$\int_0^2 \int_0^x \int_0^{x+y} e^{x+y+z} dx dy dz = \frac{e^8 - 3}{8} - \frac{3e^4}{4} + e^2$$

Agricultural Chemistry, Senior Class, May, 1901

PROFESSOR HARDIN

- I. In the manufacture of acid phosphates from phosphate rock, free phosphoric acid, mono-calcium phosphate and bi-calcium phosphate may be formed.

Write equations expressing the reactions in each case and state the reaction especially desired in the manufacture of fertilizers.

- II. Write equation expressing the formation of "reverted" phosphate when the reversion is due to the presence of undecomposed phosphate rock in the acid phosphate.

- III. How would you determine the proportion of chamber acid necessary for the proper manufacture of an acid phosphate from a given phosphate rock?

- IV. What change does the soluble phosphate undergo when an acid phosphate is applied to the soil? Why is the phosphoric acid of acid phosphates not liable to be washed out of the soil, and why is the action of a freshly applied acid phosphate more marked than that of the residue left in the soil from an acid phosphate applied a previous year?

- V. Mention some animal and vegetable manures used as sources of nitrogen. State the approximate percentage of nitrogen in each and calculate the equivalent percentage of ammonia.

- VI. Calculate the per cent. of potassium in pure potassium chloride. To what per cent. of potash (K_2O) is this equivalent? What is the usual guarantee of commercial muriate of potash?

- VII. Into what three groups may food of animal origin be divided? What additional group is there in foods of vegetable origin?

- VIII. Find the nutritive ratio of a food from the following data:

	Percentage Composition	Digestion Coefficient
Protein	12.3	55
Fibre	24.8	46
Nitrogen—free extract	38.1	64
Fat	3.3	53

- IX. What is the average composition of cow's milk? Which constituent is the most variable?

- X. How does butter differ from oleomargarine?

Freshman Agriculture, June, 1901

PROFESSOR NEWMAN

- I. Explain what is comprehended in the study of agriculture as an applied science.
- II. How is good texture of the soil obtained? Explain its beneficial effects upon the physical condition of the soil. How, and through what agencies, does it affect the chemical constituents in the soil?
- III. What do you understand by "soil mulch?" Explain its influence upon soil moisture.
- IV. Name the three most important elements of plant food. Name the principal commercial sources of each. Mention some important legumes. What do they do for the soil? How used?
- V. How do plants grow? Explain the uses of the different parts in the economy of the plant. How do plants reproduce? How do the essential organs of reproduction occur in different plants? Give examples.
- VI. Discuss the protection and improvement of worn hill lands. Describe the best means used for their protection. How are they most economically improved?
- VII. Tell how to provide fresh, green food for stock throughout the year by a combination of pasturage and green soiling crops. Tell what crops you would use at different seasons and how to grow them.
- VIII. What is meant by the "free water" of the soil? How may it be removed? Tell how its removal benefits the soil.
- IX. Discuss plant breeding for the purpose of improving the quality and increasing the quantity of production. Explain the difference between a cross and a hybrid.

Plant Diseases, Junior Class, June, 1901

- I. Give complete discussion of:
(a). Bordeaux mixture, its preparation and use. (b). Hydrocyanic acid gas, its use and its limitation (include lecture).
- II. Write an essay of 200 words (a) on the use of technical terms, and (b) state your objections to their use.
- III. (a). Name and describe the nine divisions under which our author discussed fungi. (b). Give the best general "preventative means" for each division.
- IV. Grape Mildew—Give, 1. Technical name; 2, Full life history; 3. Effect on host; 4 and 5. Preventative means (full).
- V. (a). Hop Mildew—1, Technical name; 2, General discussion; 3, Preventative means. (b). Sooty Mould of Orange—1, General discussion; 2, Natural and artificial preventative means.
- VI. Apple Tree Canker—1, Technical name; 2, Plants attacked; 3, General discussion; 4, Preventative means.

- VII. Sclerotium Disease—I, Technical name; 2, Plants attacked; 3, Life-history; 4, General discussion; 5, preventative means.
- VIII. (a). False Tinder Fungus—I, Technical name; 2, General discussion; 3, Preventative means. (b) Dry Rot—I, Technical name; 2, General discussion; 3, Preventative means.
- IX. Rice Smut—I, Technical name; 2, Distribution; 3, Preventative means.
- X. (a). Asparagus Rust—I, Technical name; 2, General discussion; 3, Life-history. (b). The Hawthorn Cluster-cups—I, Technical name; 2, General discussion; 3, Complete life-history; 4, Preventative means; 5. Why did we study this cluster-cups?

Stock Feeding, Senior Class, June, 1901

ASSISTANT PROFESSOR CONNER

1.
 - a. By what is the protein consumption in the body measured?
 - b. What influence has the feeding of fat and carbohydrates on the protein consumption?
 - c. What is the effect of feeding protein alone?
 - d. What is the influence of salt on protein consumption?
 - e. From what is fat formed in the body?
2.
 - a. Of what does the increase consist in fattening?
 - b. What per cent. of the food is used by the steer to put on fat?
 - c. Explain "wide and narrow ration."
 - d. Where may each be used to advantage?
 - e. Explain method of calculating ration.
3.
 - a. Give feeding value of corn to steers.
 - b. What is the feeding value of the corn cob?
 - c. When may wheat be fed in the place of corn?
 - d. Why is it best to feed a horse on oats?
 - e. Give the value of C. S. meal and linseed meal as a food for stock.
4.
 - a. At what stage would you cut corn, sorghum and cow pea vines for forage?
 - b. How does loss occur in saving forage by field curing and in the silo?
 - c. What effect has rain or dew on partly cured hay?
 - d. Name and give value of some of our grasses and legumes valuable for hay and pasture in the South.
5.
 - a. What does oat straw furnish when used as a stock food?
 - b. Give the advantages of soiling.
 - c. When does it pay to cook or soak food for stock?
 - d. Does it pay to grind grain for hogs?
6.
 - a. Why does silage increase the milk flow?
 - b. What gives value as a fertilizer to manure?
 - c. How much work will a horse do in 10 hours walking 3 miles per hour, drawing 75 pounds?
7.
 - a. Should grain be fed to steers on pasture?

- b. Why is not shelter as necessary for fattening stock as for milch cows?
- c. How often should beef cattle be fed?
- d. What is the value of breed in beef making?
- 8. a. Can the per cent. of fat in the milk be changed by feeding?
- b. What per cent. of the food is changed into milk and butter fat by the cow?
- 9. a. What is the feeding value of skim milk when fed to hogs?
- b. What other kind of food should be fed with skim milk?
- c. What gives feeding value to whey?
- 10. a. Which of the three—sheep, swine or cattle—eat most per 100 pounds, live weight?
- b. Which requires most per 100 pounds gain?

Mechanical Engineering, Senior Class, May 28, 1902

ASSISTANT PROFESSOR BARNES

1. Explain the process of *Mechanical Refrigeration*, giving the cycle in full. Explain the difference between an *Ice Plant* and a *Refrigeration Plant*.
2. What is the chemical composition of *Acetylene*? How is it generated? How is *Calcium Carbide* made?
3. If calcium carbide costs \$0.04 per pound, and one pound will produce 5 cubic feet of gas, which burning at the rate of 1-2 cubic feet per hour, gives 35 candle power; and if kerosene oil is worth 15 cents per gallon and a lamp burning 1-12 of a gallon per hour gives 35 candle power. Which will be the cheaper and how much per week if used 5 hours per day, and the same amount of light is furnished?
4. A double acting steam engine is to furnish 150 horse power at 350 revolutions per minute. If the average effective steam pressure is 75 pounds. Find the diameter of the cylinder and length of stroke, where the stroke is 3-2 the diameter. (Neglect size of piston rod.) What will be the *piston speed*? What will be the largest size of fly-wheel that can be used if the safe rim speed is one mile per minute?
5. Draw an ideal card of a four cycle gas engine, indicate upon this card the events of the cycle. Explain how these events are influenced by changing the point of ignition. State three points in favor of the hydro-carbon engine for small powers.
6. A gasolene engine of 30 D. H. P. is to have four cylinders. If the M. E. P. is 70 pounds and the mechanical efficiency 90 per cent., find the diameter of cylinders and stroke, where the stroke=diameter.
7. What are some of the main advantages of *petroleum* as a fuel? Give the method of using compressed air, and state some of the applications to the arts. What is the effect of reheating the air before using it in the air motor. What advantages has compressed air in mining operations.
8. Distinguish between an exhaust steam *feed water heater*, and an *econ-*

omizer. Compare belt driven pumps, and direct acting steam pumps as means of feeding a boiler.

9. What is understood by the terms Contract and Specifications, and what do they include. What are the points that an invention must possess to be entitled to a patent.

Junior Kinematics, June, 1901

ASSISTANT PROFESSOR BARNES

1. Define: Circular pitch; pure mechanism; velocity; intermittent motion; angle of action, in gearing.
Distinguish between rolling and sliding contact.
State the manner of generating the following curves: logarithmic spiral; epicycloid; hypocycloid; involute.
2. State the conditions necessary that a set of gears may be interchangeable.
Show by *diagram* a method of producing intermittent motion when the driver is a shaft with uniform angular velocity; also one method when the driver is a screw revolving at uniform speed.
3. A train runs at the rate of 110 miles in 2 hours and 40 minutes. The locomotive drivers are 64 inches in diameter and the stroke of the piston is 22 inches. Find (a) the velocity of the engine relative to the earth; (b) the average velocity of the piston relative to the frame of the engine.
4. A pair of grooved friction wheels have pitch diameters of 10 feet and 5 feet; the working depth of the grooves equals 2 inches; the pinion makes 150 revolutions per minute. Find the maximum sliding action in feet per minute, assuming no slip at the pitch lines.
5. A motor furnishes 10 H. P. The speed of the driving pulley on the motor is 1,330 revolutions per minute. If this pulley is 6" in diameter, find (a) size of pulley to be used on line shaft so that the speed may be 190 revolutions per minute; (b) the width of double belt necessary to transmit the power to the shaft; (c) the size of shaft suitable for this work.
6. Two parallel shafts are 24" apart, and are connected by two gears of 4 pitch. The first shaft has a speed of 150 revolutions per minute. The velocity ratio between this and the second shaft is 5 to 7. Find (a) the speed of the second shaft; (b) the number of teeth on each gear; (c) the outside diameter of each gear; (d) the largest size of pulley that can be used on the motor shaft in Prob. No. 5 that will not cause the belt to run at a greater velocity than the safe limit.
7. Prove fully by diagram and demonstration that cones can be used to transfer motion with a definite velocity ratio between shafts that are neither parallel nor intersecting.
8. Name four modes of transmitting motion.
Define an elementary combination, and name the three classes of the parts of a machine.

Name one point in favor of and one point against the use of involute gears.

9. Design and explain a Whitworth Quick Return Motion, in which the return is made during 90 degrees of the revolution. Find the distance between the centers of the rotating parts if the arm of the shaft is 8" (No. 9) long.
10. Find the train for a 30-day clock, the barrel to carry 24 turns of weight cord; escapement to have 30 teeth, and pendulum to vibrate 60 times per minute. Assume sizes for wheels and pinions.

Senior Electrical Engineering, Alternating Currents, June, 1901

PROFESSOR RIGGS

- I. Explain fully illustrating by example, the following: (1) Maximum, average, and effective values of C or E. (2) Reactance; impedance. (3) Reactive and active pressures. (4) Apparent and true power—p. f.
- II. A laminated wrought iron ring whose $A=10$ sq. cms. mean circumference= $1,256$ cms., wound with 500 turns, is traversed by an alternating sinusoidal current whose maximum value= 70.72 working permeability of the core= 500 , $f=127.5$; resistance of coil= 10 ohms. Find (1) Inductance of coil. (2) The time constant. (3) Reactance. (4) Impedance of coil. (5) Reactive drop. (6) Ohmic drop. (7) Impressed pressure. (8) Phase angle. (Illustrate graphically 3, 4, 5, 6, 7, 8.)
- III. A 60 cycle, 2 phase, syn. motor, situated 15 miles from the generator, is supplied with 90 K. W. at 10,000 volts. Allowable energy lost in the line 9 per cent. of the delivered power—p. f. of load 90 per cent. Find (1) Nearest size B. & S. for the transmission lines. (2) With wire selected, calculate the actual energy lost in the lines. (3) Eff. of transmission in terms of delivered power. (4) Line impedance. (5) (Graphically) Voltage at generator terminals (either phase).
- IV. A 1,000 volt, 127.5 cycle generator is used for lighting a town. Ten arc lights, each having an $L=.0075$, and a resistance of 7 ohms, are arranged in series on a No. 10 B. & S. circuit 10,000 ft. around. In parallel with the arc line is a similar circuit containing ten series inc. lights, each having a resistance of 9 ohms. Find for each circuit (1) Impedance. (2) Current. (3) True and apparent power. (4) p. f. of each circuit. (5) Efficiency of each circuit. (6) What detrimental effect has the self induction of the arc lamps?
- V. An induction motor "A," whose apparent $L=.0125$ and $R=.20$ is operated in parallel with an overexcited syn. motor "B," which acts like a circuit having a capacity of 500 m. f. and 15 ohms resistance. The distance between generator and motor is 5 miles, and the circuit is of No. 3 B. & S. wire, run 12" between centres. $f=63.7$ voltage at the load terminals 1,000 volts. Find for each circuit the following: ZA

- & Z_B . (2) CA & CB . (3) $\emptyset_A$ & $\emptyset_B$. (4) Impedance of A & B together, Z_{AB} . (5) Line impedance, Z_L . (6) Total impedance. (7) Generator voltage.
- VI. Explain fully the construction and operation of an induction motor. Problem: A 60 cycle induction motor has a 6 pole stator winding; the slip at full load is 10 per cent. Find motor speed at full load.
- VII. Explain the operation of a syn. motor, showing how it can take current to meet its load demands, in operating at a constant speed and field excitation. Problem: The self-induction of a syn. motor $=.0075$ and resistance $=2.5$ ohms. Terminal voltage of motor 1,000 volts. Motor excitation is adjusted to 1,100 volts. $f=63.7$. Input current $=100$ amp. Find graphically the following: (1) Necessary resulting E . (2) $\emptyset_1$ $\emptyset_2$. (2) Power input and p. f. (3) Power converted by motor. (4) Elec. eff. (5) Would it improve the p. f. to diminish the motor's excitation to give 800 volts instead of 1,100?
- VIII. Explain (1) the star and mesh 3 phase armature connections. (2) Problem: A 60 K. W., 4,000 volt generator having a star connected armature is reconnected as a mesh. (a) What will be the terminal voltage in the latter case? (b) What the relative heat loss in the armature conductors at full load?
- IX. A 4-pole, 60-cycle, single, two or three-phase rotary converter has a multiple wound armature of 500 conductors. The flux per pole is 1,000,000 lines. Diagram the connections between the collector rings and armature windings for each conversion. (2) Calculate the D. C. voltage, and the single, two and three-phase voltage at the collector rings.
- X. Explain action of a transformer (1) With secondary open. (2) With sec. loaded. (3) What is meant by the exciting and the magnetizing currents in a trans.? (4) What is meant by "ageing"—the cause and remedy? (5) State relative advantages of open and closed magnetic current trans. Problem: With the sec. circuit open, 10 amps. flow in the primary of a 100 K. W. trans. under a terminal pressure of 1,000 volts. A Watt metre connected in the primary circuit reads 1,000 Watts. (1) Compute the wattful component of the exciting current. (2) Find graphically the magnetizing comp.
- XI. A 5 K. W. trans. has the following net Effs.: At full load, 95 per cent.; at $\frac{3}{4}$ load 94 per cent.; at $\frac{1}{2}$ load, 92 per cent.; at $\frac{1}{4}$ load, 90 per cent. Iron losses at all loads 75 watts, and heat loss in primary due to exciting current when sec. is open 5 watts. This trans. is operated for 5 hours at full load, 5 hours at $\frac{3}{4}$ load, 2 hours at $\frac{1}{2}$ load, 2 hours at $\frac{1}{4}$ load, and the remaining hours of the 24 at no load. Find its all-day efficiency.
- XII. Practical Questions: Discuss briefly the relative advantages of high and low frequency for light and power. (2) what is the relative amount of copper required for a single phase, two phase 4 wire, two phase 3 wire, and three phase 3 wire system? (3) What are the objections to making a large polyphase syn. motor self-starting?

- (4) How are trans. rated, and what allowance must be made in their capacity for work on an induction load? (5) What is a balance polyphase system?

Junior Electrical Engineering, Second Term

PROFESSOR RIGGS

1. (a) Show that the heat loss in a conductor of resistance R , carrying a current of C amperes is $C^2 R$; (b) Prove that a mechanical horse power = 746 watts.

2. Briefly outline the construction and operation (a) of an open arc lamp; (b) of an enclosed arc lamp; (c) of an incandescent lamp; (d) give practical rule for connecting arc light carbons properly in the circuit.

3. Explain fully the generation of E. M. F. in a dynamo, describing the essential parts of the machine, and explaining fully the function and operation of the commutator.

4. Explain fully the operation of an electric motor; the generation of C. E. M. F. in the armature of the motor and the effects.

5. (a) Explain three methods of exciting the fields of dynamos. (b) Define the following terms: Electrical, gross, and net eff.

6. 125-10 amp. 2,000 (nominal) c. p. open arc lamps requiring each 450 watts are placed in a series circuit of No. 8 B. & S. wire 5,000 feet around; Armature resistance = 1 ohm; series field $R = 2$ ohms. Find: (1) Necessary p. d. at generator terminals; (2) E. M. F. of generator; (3) Eff. of line trans.; (4) Electrical eff. of generator; (5) Electrical eff. of line and generator together.

7. 508-20 c. p. 3.2 watts—108.3 volts incandescent lamps are situated in barracks, which is 590 ft. distant from the power station. The maximum allowable loss in trans. is 5 per cent. Find: (1) nearest size (or sizes) B. & S. wire that should be used; (2) with this wire the necessary p. d. at the generator terminals; (3) Eff. of trans. attained.

8. A shunt generator furnishes to a bank of incandescent lamps 300 amp. at 120 volts. Mechanical losses in generator = 1 H. P.; iron losses in arm. core $\frac{1}{2}$ K. W.; Arm. $R = .01$ ohm; shunt field $R = 30$ ohms. Find: (1) Net eff.; (2) Elec. eff.; (3) Necessary H. P. that must be applied to generator pulley; (4) Net eff. of generator at an output of 50 amp.

9. A shunt motor is supplied with 102 amp. at 500 volts. Motor's iron losses = 200 watts; mechanical losses $\frac{1}{2}$ H. P.; Arm. $R = .1$ ohm; shunt field $R = 250$ ohms. Find: (1) C. E. M. F.; (2) Net eff. of motor; (3) H. P. at motor pulley.

10. Find the relative cost of copper for trans. 500 K. W. with a limiting loss of 10 per cent., a distance of 5,000 ft., copper being worth \$.20 per lb. (use nearest size or sizes B. & S.), (1) at 10,000 volts; (2) at 5,000 volts; (3) at 1,000 volts.

11. The Textile School motor is rated at 30 H. P.—220 volts—85 per cent. net eff. Its distance from the power plant is 1,000 ft. The line of one-half

this distance is composed of two No. 1 B. & S. wires in parallel; the other half of the line is of a single No. 0000 B. & S. wire. Find: (1) line drop; (2) p. d. at generator terminals.

12. It costs in the Clemson power plant about \$.05 per K. W. hour, to produce power. The pumping station is situated 2,500 ft. from the plant, and the motor therein is connected to the plant by a No. 000 B. & S. wire. The switch board instruments show that the motor line is furnished with 50 amp. at 230 volts, for about 8 hours per day for 300 days of the year. Would it pay the College to borrow money at 7 per cent. interest and run an additional No. 0000 B. & S. wire in parallel with the first in order to reduce the line losses, copper being worth \$.20 per lb., and the additional line construction, say \$50.00 per thousand feet of distance?

Senior Civil Engineering, June, 1901

PROFESSOR BRODIE

BRIDGE ENGINEERING.—A through Pratt, single track, railroad bridge, with span of 144 feet, has six panels and a depth of 26.9 feet. It is designed to carry a live load of two coupled, consolidation locomotives, 139 tons each, followed by 1.6 tons per lineal foot of train load. (Weights and spacing of wheels as shown on diagram.)

Compute maximum live load stress in:

- I. First diagonal.
- II. First panel of lower chord.
- III. Third diagonal.
- IV. Second vertical.
- V. Counter diagonal in third panel.

Compute for uniform live load of 44 tons per panel per truss:

- VI. Second diagonal.
- VII. Counter in second panel.
- VIII. First vertical.

IX. Find the uniform load per linear foot that will cause the same maximum bending moment in a beam of 20 ft. span as the drivers of a passenger locomotive, each weighing 40,000 pounds, and 8 feet apart.

X. Prove that for maximum moment from wheel loads $P = \frac{n}{m} W$, or
that the weights on the segments of the span are proportional to the lengths of the segments.

Junior Textile Industry, June, 1901

PROFESSOR BEATY

No. 1. Most modern mills use the English system of drawing, *i. e.*, the corded slivers are run through 3 heads of drawing, doubling 6 into 1 at each head. Some of the older mills use a railway head and 2 heads of drawing. Discuss fully the advantages and disadvantages of each system.

(b). Drawing frames have, generally, four lines of drawing rolls. On some drawing frames the top rolls are covered with leather, while in other drawing frames metallic top rolls are used. Compare the meritorious features of the two systems.

Also give approximate setting distances of each of the above rolls, running on $1\frac{1}{4}$ " American cotton.

(c). In carded slivers the composing fibres are disposed in all directions. In the finished yarn, the fibres are supposed to approach something like a parallel order, with regard to each other. Name the machine or machines in which this parallelization of the fibres is effected.

Describe by sketch and word how this parallelization is effected.

(d). Give a full discussion as to the necessity of drawing slivers, before they are subjected to the twisting processes.

No. 2. Sketch the "compound" or "differential" motion on a roving frame, and describe (1) its purpose; (2) how this purpose is accomplished; (3) what parts of the mechanism of the frame directly govern the workings of the differential, and (4) what motions in the frame are directly governed by the action of the differential?

No. 3. Let R =Large end of driving cone.

r =Small end of driving cone.

D =Diameter of full bobbin= 3.5 ".

d =Diameter of empty bobbins= $17-16$ ".

T =Sum of diameters of cone= 10.5 ".

Calculate the diameters of the driving cone at the beginning of the set, and at the end of set. These results will also represent the end diameters of the driving cone in inverse order.

$$X = \frac{T R d}{rd_2 + Rd} \quad \text{and} \quad x = \frac{rd_2 T}{Rd + rd_2} \quad \text{when } X \text{ and } x$$

represent the diameters of the two cones respectively at any points, corresponding to each other in the length, and that d_2 is the diameter of the bobbin at that point in its build where the position X is the correct one for the cone belt. Substitute the other values from the first part of example No. 3.

No. 4. Briefly outline the automatic action of the traveller in winding the yarn on the bobbin, in the process of spinning.

(B). Compare the winding of yarn, by the spindle and traveller, in spinning, with the winding of roving, by the spindle and flyer, in roving frames.

Junior Textile Industry, February, 1901

PROFESSOR BEATY

12.5 X yards

- No. 1. (A). Prove that $\frac{\text{weight in grains}}{\text{weight in grains}} = \text{worsted counts}$.
- (B). If you have 100 pounds weight of 3-ply yarn, made from 80s, 40s and 30s worsted, what would be the counts of the 3-ply?
- (C). Twist together a 10 run wool, a 20 cut wool and a 60s cotton yarn. What would be the weight in grains of 120 yards of the resultant yarn? What would be its equivalent in worsted counts?
- No. 2. (A). Why is it necessary to give attention to the proper mixing of cotton?
- (B). State fully your objections to using from a small mixing?
- (C). What are the advantages derived from breaking up cotton as it is received in the bales, and letting it stand in an open stack for some time, before using? How far does this aid in the subsequent operation of opening?
- No. 3. (A). What is the primary function of a lapper? Describe how this function is performed?
- (B). What is the secondary function of a lapper? Describe how this function is performed?
- (C). State the necessity of having a "piano motion" on a lapper, and describe how it performs its work?
- (D). If a lapper produces 12,000 pounds of laps per week (60 hours), how many lappers are required for a mill containing 90,000 mule spindles, spinning 60s cotton, and producing 23 hanks per spindle per week, waste not considered?
- (E). If you were making a 35 pound lap at the breaker lapper and wished to alter the feed so as to make a 40 pound lap, how would you do it?
- No. 4. (A). Name and describe the dual operation performed by the licker-in teeth?
- (B). What effect would changing the draft gear have on the speed of the doffer?
- (D). Describe the action of each part of the card, on the cotton fibres, as they pass through, from the feed roll to the coiler can?
- (D). A card is producing a 50 grain sliver; the change gear has 18 teeth; the draft constant is 1,500; allowing 4 per cent. for waste, what is the hank lap entering the card?
- No. 5. (A). Suppose you began with a drawn sliver .160 hank and produced a slubbing 1.6 hank; two ends of slubbing put through the intermediate frame gives 3.5 hank, and two ends of intermediate roving through the fine roving frame gives a 9 hank;

what are the drafts in the intermediate and fine roving frames respectively?

- (B). Yarn number 40s is being spun from a double roving with a 40 tooth draft gear, each end of roving being a 6 hank; with what draft gear can the same number be spun from a 4.5 hank, using single roving?
- (C). If the diameter of a cotton thread No. 30s is 1-143", what is the diameter of No. 60s cotton yarn? The diameters of cotton yarn varying inversely as the square root of the numbers.
- (C). Give sketches showing the difference in the principle of the traverse mechanism of a ring spinning frame for spinning filling yarn and one for spinning warp yarn?
- (D). Describe the "elastic top" spinning spindle and outline the principle upon which it depends for its action?
- (E). Describe the twisting and winding action of the spindle, in the mule spinning frame?

What is meant by "the jacking motion;" "twisting at the head;" "backing off;" "carriage gain?"

- No. 5. Find the average counts of yarn to produce a piece of *shade cloth*, weighing 6.15 yards per pound, if the cloth is constructed with 56 ends of warp per inch and 44 picks of filling per inch, and the width of the cloth is 40" on the loom. Allow 8 per cent. for take-up in width, and 10 per cent. for sizing and take-up in length.

- No. 6. You wish to produce a 40s yarn on spinning frame from a 12.5 oz. lap at the card (using 1" American staple). Lay out the drafts and doublings from spinning frame back to the card, which, in your judgment, will give satisfactory results on the desired counts.

Indicate the revolutions per minute of the front rollers of each machine to conduce to the best results on the above counts and staple. Also give the hank roving of the product of each machine.

- No. 7. Under how many general heads may all sizing ingredients be classed? Name them? Give an example of each, and state the specific purpose for which each ingredient is used in a size-mixture?

- (B). Give a receipt for a size-mixture, which will give good results on a cloth which is to be bleached?

Student Register

Post-Graduate Students

NAME	COUNTY	NAME	COUNTY
W. A. Burgess.....	Colleton	A. P. Lewis.....	Oconee
H. R. Dwight.....	Berkeley	W. E. McLendon.....	Darlington
John W. Gantt.....	Virginia	A. S. Shealy.....	Saluda
E. T. Hughes.....	Orangeburg		

Senior Class

Agricultural Course

NAME	COUNTY	NAME	COUNTY
E. B. Boykin.....	Darlington	L. H. McCullough....	Williamsburg
E. Brockmann, Jr.....	Richland	F. K. Norris.....	Orangeburg
J. M. Burgess.....	Clarendon	S. M. Robertson.....	Pickens
G. H. Hardin.....	Oconee	D. H. Sally.....	Aiken
J. E. Martin, Jr.....	Charleston	J. B. Tinsley.....	Union
G. F. Mitchell.....	Charleston	M. E. Zeigler.....	Orangeburg

Senior Class

Mechanical Course

NAME	COUNTY	NAME	COUNTY
G. E. Bamberg.....	Bamberg	J. D. Meador.....	Union
B. H. Barre.....	Lexington	T. H. Monroe.....	Union
E. G. Campbell.....	Charleston	G. T. McGregor.....	Richland
H. T. Cantey.....	Clarendon	H. T. Poe, Jr.....	Greenville
A. B. Carr.....	Richland	T. R. Phillips.....	Orangeburg
G. B. Clinkscales.....	Spartanburg	C. L. Reid.....	York
W. W. Coleman.....	Aiken	J. M. Rodger.....	Union
F. Crawford.....	Pickens	C. H. Seigler.....	Aiken
C. Douthit	Anderson	M. A. Sitton.....	Anderson
J. C. Earle.....	Anderson	W. F. Sneed.....	Charleston
W. C. Forsythe.....	North Carolina	S. C. Stewart.....	Pickens
C. N. Gignilliat.....	Oconee	H. C. Stokes.....	Hampton
F. M. Gunby.....	Orangeburg	D. A. J. Sullivan.....	Charleston
F. M. Jordan.....	Oconee	S. M. Ward, Jr.....	Georgetown
E. J. Larsen.....	Colleton	J. B. Watkins.....	Saluda
James Lynah	Charleston	H. A. Wilson.....	Sumter
H. W. Marvin.....	Colleton		

Senior Class

Textile Course

NAME	COUNTY	NAME	COUNTY
A. R. Barrett.....	York	D. Kohn.....	Orangeburg
J. H. Brown.....	Oconee	H. F. Little.....	Spartanburg
W. E. Chapman.....	Greenville	F. E. Pearman.....	Anderson
W. F. Cole.....	North Carolina	W. T. Prescott.....	Edgefield
W. B. Cothran.....	Greenwood	T. C. Shaw.....	Abbeville
B. C. Cromer.....	Anderson	J. H. Spencer.....	York
J. E. Gettys.....	York	T. B. Spencer.....	York
David Jennings.....	Charleston	W. G. Templeton.....	Abbeville
H. B. Jennings, Jr.....	Charleston		

Junior Class

Mechanical Course

NAME	COUNTY	NAME	COUNTY
E. P. Alford.....	Florence	L. O. King.....	Anderson
G. R. Barksdale.....	Greenwood	B. H. Lawrence.....	Darlington
W. H. Barnwell.....	Sumter	D. K. Lewis.....	Oconee
J. T. Beaty.....	North Carolina	D. S. Lewis.....	Oconee
W. E. G. Black.....	Spartanburg	V. Livingston.....	Marlboro
J. L. Bradford.....	Lexington	J. T. McNeill.....	Sumter
S. J. Chandler.....	Florence	F. D. Marjenhoff.....	Charleston
W. B. Chisolm, Jr.....	Charleston	J. V. Matthews.....	Bamberg
E. J. DaCosta.....	Beaufort	A. J. Milling.....	Greenwood
F. G. DeSaussure.....	Charleston	N. W. Newell.....	Anderson
E. D. Ellis.....	Abbeville	G. F. Norris.....	Orangeburg
E. R. Finger.....	Spartanburg	H. R. Pollitzer.....	Beaufort
J. A. Forsythe, Jr....	North Carolina	J. F. Prioleau.....	Beaufort
H. M. Franks.....	Laurens	P. J. Quattlebaum.....	Saluda
R. A. Gandy.....	Darlington	C. Y. Reamer.....	Richland
T. S. Gandy.....	Darlington	J. T. Robertson, Jr....	Abbeville
B. H. Gardner.....	Aiken	D. H. Sadler.....	York
M. A. Grace.....	Colleton	H. C. Sahlmann.....	Anderson
S. E. Gregory.....	Lancaster	C. V. Sitton.....	Anderson
H. Green.....	Sumter	H. C. Tillman.....	Edgefield
J. E. Harrall.....	Chesterfield	N. D. Walker.....	Union
T. M. Harvey.....	Berkeley	W. M. Wightman.....	Orangeburg
R. B. Haynesworth.....	Florence	O. B. Wilson.....	York
W. A. Holland, Jr.....	Oconee	R. H. Witherspoon.....	Anderson
G. M. Honour.....	Charleston	J. H. Woodward.....	Barnwell
J. D. Hughey.....	Greenwood	J. C. Wylie.....	Chester
M. N. Hunter.....	Anderson	J. H. Wyse.....	Richland
B. H. Kaigler.....	Lexington		

Junior Class

Agricultural Course

NAME	COUNTY	NAME	COUNTY
G. O. Epps.....	Williamsburg	M. M. Mitchell.....	Aiken
S. W. Epps.....	Williamsburg	B. F. Pegues.....	Marlboro
B. Freeman.....	Charleston	J. W. Ready.....	Saluda
W. D. Garrison, Jr.....	Anderson	E. B. C. Watts.....	Chesterfield
L. B. Haselden.....	Marion	T. B. Young.....	Florence
S. L. Jefferies.....	Cherokee		

Junior Class

Textile Course

NAME	COUNTY	NAME	COUNTY
N. H. Alford.....	Marion	T. Jordan.....	Fairfield
W. J. Austin.....	Abbeville	G. A. Larsen.....	Colleton
C. E. Bionneau.....	Beaufort	C. W. Legerton.....	Charleston
W. O. Cain.....	Sumter	G. D. Levy.....	Sumter
J. C. Cullum.....	Lexington	H. N. McCrary.....	Anderson
J. P. Cummings.....	Fairfield	C. W. McSwain.....	Laurens
F. H. Cunningham.....	Anderson	G. L. Morrison.....	North Carolina
J. C. Cunningham.....	Anderson	T. S. Perrin, Jr.....	Abbeville
D. E. Earle.....	Pickens	F. K. Rhodes.....	Florence
S. Ford.....	Fairfield	T. E. Stanley, Jr.....	Marion
L. W. Fox.....	Lexington	D. S. Taylor.....	Anderson
J. P. Glenn.....	Spartanburg	J. B. Whitney.....	Georgia
C. B. Hagood.....	Pickens	R. G. Williams, Jr.....	Greenville
D. G. Humbert.....	Pickens	V. McBee Williams.....	Greenville

Sophomore Class

Agricultural Course

NAME	COUNTY	NAME	COUNTY
H. W. Barre.....	Lexington	D. B. Fletcher.....	Marlboro
L. H. Bell.....	Darlington	H. R. Fletcher.....	Marlboro
J. N. Bethea.....	Marlboro	H. H. Kearse.....	Bamberg
J. O. Breeden.....	Marlboro	W. F. Mauldin.....	Pickens
S. G. Bryan.....	Williamsburg	J. M. Monroe.....	Marion
L. E. Carter.....	Charleston	S. O. O'Bryan.....	Williamsburg
J. R. Connor.....	Berkeley	T. C. Robinson.....	Pickens
H. H. Evans.....	Sumter	M. P. Smith.....	Charleston
S. E. Evans.....	Abbeville	W. P. Walker.....	Barnwell

Sophomore Class

Mechanical Course

NAME	COUNTY	NAME	COUNTY
C. Ancrum.....	Kershaw	F. W. Lachicotte, Jr....	Georgetown
V. Baker.....	Cherokee	T. N. Lide.....	Marion
J. G. Barnwell.....	Sumter	L. Lipscomb.....	Cherokee
M. Brabham.....	Barnwell	J. R. London, Jr.....	York
R. H. Breese.....	North Carolina	T. M. Lundy.....	Horry
E. F. Brown.....	Anderson	Geo. T. McGregor.....	Richland
W. Chavous.....	Barnwell	G. W. McIver, Jr.....	Charleston
H. F. Cheatham.....	Abbeville	W. M. McWhorter.....	Anderson
R. J. Coney.....	Dorchester	H. M. Manigault, Jr....	Dorchester
J. R. Cothran.....	Greenwood	F. H. Martin.....	Greenville
P. C. Cothran.....	Greenwood	H. W. Matthews.....	Bamberg
E. P. Crouch.....	Charleston	J. Maxwell.....	Anderson
H. W. Crouch, Jr.....	Charleston	W. B. Mays.....	Greenwood
J. T. Davenport.....	Greenville	R. E. Miller.....	Pickens
D. P. Dehon.....	Dorchester	O. P. Mills, Jr.....	Greenville
C. Dew.....	Greenwood	I. H. Morehead.....	Greenville
R. T. Dial.....	Richland	E. H. Muller.....	Charleston
W. H. Donly, Jr.....	Lexington	C. Norton.....	Horry
J. A. Drake.....	Marlboro	H. E. Phillips.....	Barnwell
J. N. Drake.....	Marlboro	V. C. Platt.....	Berkeley
I. F. Eldredge.....	Kershaw	G. L. Preacher.....	Barnwell
P. L. Elias.....	Charleston	J. T. Reese.....	Edgefield
S. J. Faris.....	York	M. S. Reeves.....	Charleston
S. I. Felder.....	Orangeburg	O. M. Roberts.....	Greenwood
A. D. Fisher.....	Abbeville	R. V. Sawyer.....	Orangeburg
A. R. Fitzsimons.....	Charleston	J. E. Schachte.....	Charleston
J. R. Fulmer.....	Lexington	J. McM. Schorb.....	York
John Gelzer, Jr.....	York	W. O. Self.....	Edgefield
V. B. Hall.....	York	H. R. Sherard.....	Anderson
P. P. Hamilton.....	Union	J. R. S. Siau, Jr.....	Georgetown
F. T. Hamlin.....	Anderson	W. B. Sparkman.....	Georgetown
R. B. Hartzog.....	Bamberg	J. P. Tarbox.....	Georgetown
J. R. Henderson.....	Laurens	W. L. Templeton.....	Abbeville
A. M. Henry.....	Abbeville	E. A. Thornwell.....	York
H. C. Hightower.....	Bamberg	W. H. O. Van Wyck.....	Anderson
J. M. Hill.....	Bamberg	H. S. White.....	Berkeley
S. T. Hill.....	Abbeville	J. A. Wier.....	Greenwood
A. E. Holman.....	Orangeburg	J. F. Williams.....	Pickens
H. F. Hansucker.....	Marlboro	F. C. Wyse.....	Richland
J. J. A. Krentzlin..	Washington, D. C.		

Freshman Class

NAME	COUNTY	NAME	COUNTY
C. Abell.....	Chester	W. G. Erwin.....	Anderson
R. L. Adams.....	Marlboro	Cleveland Evins.....	Spartanburg
K. Allgood.....	Anderson	R. P. Evans.....	Charleston
W. C. Anderson.....	Spartanburg	H. S. Farley.....	Spartanburg
W. W. Anderson.....	Greenwood	J. B. Fickling.....	Richland
C. P. Ballenger.....	Oconee	T. H. Fox.....	Lexington
W. S. Beaty.....	Anderson	S. B. Folk.....	Colleton
Malcolm Bell.....	Georgia	S. D. Friday.....	Richland
R. L. Black.....	Colleton	A. A. Gandy.....	Darlington
M. B. Booth.....	Sumter	R. B. Gandy.....	Darlington
T. A. Bowen.....	Pickens	J. R. Godley.....	Colleton
G. A. Bonner.....	Cherokee	J. C. Goggans, Jr.....	Newberry
L. E. Boykin.....	Darlington	R. McI. Griffin.....	Richland
F. K. Breazeale.....	Anderson	C. Hanvey.....	Abbeville
J. B. Brennen.....	Richland	J. W. Hicklin.....	Chester
J. Brodie.....	Aiken	G. B. Holland.....	Oconee
H. G. Bryan.....	Barnwell	W. H. Irwin.....	Spartanburg
A. M. Burroughs.. . . .	Horry	T. B. Jacobs.....	Lexington
W. Cagle.....	Greenville	J. M. Jenkins.....	Charleston
J. L. Caldwell.....	Abbeville	W. F. Johnson.....	Bamberg
S. W. Cannon.....	Newberry	E. H. Jones.....	Abbeville
F. W. Clement.....	Charleston	C. P. Josey.....	Darlington
A. C. Collins.....	Spartanburg	W. A. Keenan.....	Richland
L. S. Connor, Jr.....	Orangeburg	T. E. Keitt.....	Newberry
W. D. Connor.....	Orangeburg	B. O. Kennedy.....	Kershaw
J. L. Coogan.....	Charleston	C. E. Lathrop.....	Orangeburg
I. C. Cross.....	Chester	H. W. Lathrop.....	Orangeburg
W. F. Crowther.....	Abbeville	C. J. Lemmon.....	Sumter
W. K. Davenport.....	Cherokee	H. G. Lewis.....	Oconee
S. C. Dean.....	Orangeburg	R. L. Link.....	Abbeville
E. B. Dibble.....	Charleston	E. C. McArthur.....	Cherokee
R. E. Dougherty.....	Orangeburg	R. H. McGee.....	Pickens
T. E. Drew.....	Colleton	E. R. McIver.....	Darlington
W. W. Dukes.....	Orangeburg	A. L. Matthews.....	Newberry
W. V. Dunn.....	Georgetown	J. McQ. Moorer.....	Dorchester
W. F. DuPre.....	Pickens	J. B. Moseley, Jr.....	Abbeville
J. E. DuRant.....	Sumter	M. L. Murph.....	Orangeburg
W. R. Earle.....	Oconee	J. L. Napier, Jr.....	Marlboro
F. G. Eason.....	Charleston	C. H. Newman.....	Chesterfield
J. D. Elkins.....	Bamberg	J. J. O'Hagan.....	Charleston
T. K. Elliott, Jr.....	Fairfield	J. G. Parks.....	Edgefield
T. R. Ellison.....	Fairfield	G. C. Perrin, Jr.....	Union
L. A. Emerson, Jr.....	Charleston	H. A. Phelps.....	Sumter
J. T. Erwin.....	Abbeville	E. R. Plowden, Jr.....	Clarendon

NAME	COUNTY	NAME	COUNTY
E. E. Porter.....	Cherokee	J. W. Stickley.....	Beaufort
W. R. Pruitt.....	Anderson	E. G. Strobel, Jr.....	Colleton
J. W. Rhode.....	Bamberg	F. M. Stubbs.....	Marlboro
J. C. Richardson.....	Hampton	F. R. Sweeny.....	Spartanburg
J. W. Riser.....	Newberry	D. B. Swygert.....	Lexington
W. H. Ritter.....	Bamberg	W. H. Taylor.....	Anderson
C. R. Robinson.....	Spartanburg	S. L. Verner.....	Oconee
J. H. Rodger, Jr.....	Union	J. W. Von Hasseln.....	Anderson
J. H. Rothrock.....	Anderson	N. Wakefield.....	Abbeville
F. M. Routh.....	Oconee	L. W. Walker.....	Clarendon
C. W. Royston.....	Spartanburg	F. E. Watkins, Jr.....	Anderson
J. W. Ruff.....	Charleston	R. M. Watson.....	Saluda
M. B. Sams.....	Cherokee	C. Webb.....	Laurens
C. C. Schirmer, Jr.....	Charleston	P. B. Weeks.....	Aiken
S. F. Seagle.....	York	W. C. Wilbur.....	Charleston
A. McL. Shealy.....	Saluda	W. S. Weston.....	Richland
M. C. Shirley.....	Anderson	A. M. Williams.....	Charleston
N. P. Shuler.....	Berkeley	J. H. Williams.....	Greenville
J. K. Simpson.....	Laurens	W. H. Wise.....	Barnwell
L. S. Sitton.....	Anderson	L. S. Wood.....	Cherokee
L. P. Slattey.....	Greenville	Arthur Youmans.....	Barnwell
F. P. Sloan.....	Greenville	C. P. Zeigler.....	Orangeburg
S. Sorentrue.....	Orangeburg	J. A. Zimmerman.....	Oconee
J. R. Sparkman.....	Georgetown	J. C. Zimmerman.....	Spartanburg
A. J. Speer.....	Abbeville	W. S. Zimmerman.....	Spartanburg
M. E. Springs.....	Georgetown		

Subfreshman Class

NAME	COUNTY	NAME	COUNTY
D. G. Adams.....	Darlington	J. C. Clark.....	Marion
C. R. Alexander.....	Chester	A. F. Cleveland.....	Spartanburg
F. G. Alexander.....	Charleston	J. A. Collins.....	Spartanburg
R. L. Allston.....	Georgetown	T. E. Collins.....	Spartanburg
F. H. Ball.....	Berkeley	T. W. Combs.....	Spartanburg
H. S. Bartless.....	Beaufort	F. H. Copeland.....	Bamberg
J. C. Boesch.....	Charleston	J. A. Crawford.....	Abbeville
A. B. Bequest.....	Charleston	St. J. Dendy.....	Oconee
T. W. Blease.....	Saluda	S. L. Dreher.....	Lexington
T. Bolt.....	Anderson	W. D. Drew.....	Barnwell
R. E. Bowen, Jr.....	Pickens	A. F. H. Dukes.....	Orangeburg
E. C. Breese.....	North Carolina	S. E. Dunbar.....	Barnwell
A. E. Brock.....	Clarendon	D. W. Elliott.....	Clarendon
O. R. Brown.....	Fairfield	J. J. Evans.....	Marlboro
B. D. Carter.....	Bamberg	A. L. Ervin.....	Florence
G. C. Cauthen.....	Lancaster	S. M. Estes.....	Fairfield

NAME	COUNTY	NAME	COUNTY
L. Fields.....	Darlington	J. H. Payne.....	Edgefield
L. E. Fitzsimons.....	Charleston	C. K. Pollitzer.....	Beaufort
J. W. Folk.....	Georgetown	J. H. Porter.....	Beaufort
L. E. Folk.....	Georgetown	J. J. Rauch.....	Saluda
S. L. Fort.....	Cherokee	W. M. Raysor.....	Bamberg
H. P. Goodwin.....	Georgetown	M. E. Reddick.....	Darlington
C. S. Harley.....	Orangeburg	J. F. Redding, Jr.....	Charleston
W. Hartzog.....	Greenwood	M. B. Reid.....	Sumter
H. C. Hastings.....	Spartanburg	J. N. Rice.....	Union
L. R. Hoyt.....	Sumter	R. L. Riggs.....	Charleston
W. E. Jaycocks.....	Colleton	W. R. Sammon.....	Richland
J. E. Johnson.....	Florence	F. B. Schirmer.....	Charleston
W. R. Jones.....	Greenville	O. H. Schumacher, Jr.....	Oconee
W. R. LaRoche.....	Colleton	C. B. Seabrook.....	Charleston
G. F. Leitzey.....	Richland	G. W. Shumpert.....	Lexington
L. C. Lewis.....	Edgefield	C. F. Simmons.....	Greenwood
S. C. Little.....	Spartanburg	J. C. Sitton.....	Anderson
L. B. Martin...District of Columbia		L. G. Southard.....	Union
W. J. May.....	Union	T. E. Stokes.....	Darlington
J. S. Merchant.....	Saluda	B. L. Swygert.....	Lexington
A. A. Merrick.....	Oconee	J. S. Taylor.....	Anderson
G. F. Miller.....	Orangeburg	J. E. Traxler.....	Florence
H. C. Miller.....	Anderson	F. J. Turner.....	Bamberg
J. M. Miller.....	Richland	J. W. Upton.....	Oconee
G. H. Moore.....	Spartanburg	E. M. Walker.....	Edgefield
E. B. Muldrow, Jr.....	Sumter	J. T. Walker.....	Greenville
A. B. Murchison.....	Kershaw	T. M. Walsh.....	Barnwell
S. McCall.....	Florence	A. F. Ward.....	Georgetown
J. C. McLeod.....	Marlboro	M. B. Watson.....	Saluda
G. W. McLure.....	Chester	L. Welch.....	Union
W. P. Ouzts.....	Greenwood	P. E. Wilbur.....	Charleston
V. Parker.....	Fairfield	T. H. J. Williams, Jr.....	Charleston
S. H. Parks.....	Greenville	J. E. Williamson.....	Sumter
W. T. Parrott.....	Oconee	W. E. Willimon.....	Greenville

Summaries

By Classes

Postgraduates	7	Sophomores	97
Seniors	62	Freshmen	140
Juniors	94	Subfreshmen	100

By States

South Carolina	488	Maryland	1
North Carolina	7	District of Columbia	1
Georgia	2		—
Virginia	1	Total	500

By Counties in South Carolina

Abbeville	21	Hampton	2
Aiken	7	Horry	3
Anderson	39	Kershaw	4
Bamberg	15	Lancaster	2
Barnwell	13	Laurens	5
Beaufort	8	Lexington	14
Berkeley	8	Marion	6
Charleston	43	Marlboro	14
Chester	7	Newberry	5
Chesterfield	3	Oconee	21
Cherokee	10	Orangeburg	24
Clarendon	7	Pickens	14
Colleton	11	Richland	17
Darlington	15	Saluda	9
Dorchester	5	Spartanburg	22
Edgefield	8	Sumter	16
Fairfield	7	Union	12
Florence	9	Williamsburg	5
Georgetown	12	York	14
Greenville	17		—
Greenwood	14	Total, South Carolina	488

Church Affiliation

Baptist	135	Christian	4
Methodist	114	Israelite	6
Presbyterian	85	Unitarian	1
Episcopalian	82	Universalist	1
Lutheran	25	No Church preference	25
Catholic	14		—
A. R. Presbyterian	8	Total	500

Occupation of Parents

Farmers	235	Contractors	6
Merchants	63	Bankers	8
Officers	22	Teachers	12
Physicians	15	Ministers	5
Lawyers	7	Engineers	2
Manufacturers	30	Drummers	7
Insurance Agents	10	Dentist	1
Bookkeepers	5	Miscellaneous	57
Clerks	13		
Hotel Keepers	2	Total	500

Section Marchers

SECOND TERM

A. Senior	D. H. Sally and J. M. Burgess
T. Senior	B. C. Cromer and H. B. Jennings
1 E. Senior	F. M. Gunby and F. M. Jordan
2 E. Senior	W. W. Coleman and G. E. Bamberg
3 E. Senior	B. H. Barre and A. B. Carr
4 E. Senior	S. C. Stewart and Graeme T. McGregor
C. Senior	C. L. Reid and H. T. Cantey
A. Junior	T. B. Young and S. W. Epps
1 E. Junior	W. E. G. Black and W. H. Barnwell
2 E. Junior	T. M. Harvey and T. S. Gandy
3 E. Junior	V. Livingston and B. H. Lawrence
4 E. Junior	G. F. Norris and H. C. Tillman
1 T. Junior	C. B. Hagood and D. E. Earle
2 T. Junior	C. W. Legerton and C. W. McSwain
A. Sophomore	J. R. Connor and S. O. O'Bryan
1 M. Sophomore	C. Dew and V. Baker
2 M. Sophomore	J. N. Drake and V. B. Hall
3 M. Sophomore	A. E. Holman and J. R. London
4 M. Sophomore	C. Norton and O. M. Roberts
5 M. Sophomore	J. P. Tarbox and W. L. Templeton
1 Freshman	W. S. Beaty and L. E. Boykin
2 Freshman	W. W. Dukes and F. G. Eason
3 Freshman	R. B. Gandy and T. R. Ellison
4 Freshman	B. O. Kennedy and T. E. Keitt
5 Freshman	J. G. Parks and C. H. Newman
6 Freshman	L. P. Slattery and S. Sorrentrue
7 Freshman	R. M. Watson and W. S. Weston
1 Subfreshman	D. G. Adams and B. D. Carter
2 Subfreshman	J. E. Johnson and D. W. Elliott
3 Subfreshman	W. T. Parrott and J. J. Rauch
4 Subfreshman	T. E. Stokes and J. E. Williamson

Regimental Organization, June, 1902

For instruction in infantry tactics and military and police discipline, the cadets are organized into a regiment of two battalions of three companies each, under the Commandant of Cadets, each battalion being commanded by an instructor of the College detailed for this duty.

The officers and non-commissioned officers are selected from those cadets who have been most studious, soldier-like in the performance of their duties, and most exemplary in their general deportment. In general, the officers are taken from the Senior Class, the sergeants from the Junior Class, the corporals from the Sophomore Class. The figures indicate relative rank.

COMMANDANT OF CADETS

COMMISSIONED STAFF

T. R. PHILLIPPS.....Lieutenant and Adjutant
G. F. NORRIS.....Lieutenant and Quartermaster
F. M. JORDAN

NON-COMMISSIONED STAFF

T. S. PERRIN.....Sergeant-Major
T. B. YOUNG.....Quartermaster-Sergeant
N. D. WALKER.....Color Sergeant

FIRST BATTALION

Company A Company B Company C Company G

Captains

B. H. BARRE² GRA. T. MCGREGOR¹ A. B. CARR⁴ D. H. SALLEY⁶

Lieutenants

C. N. GIGNILLIAT¹⁰ H. A. WILSON⁴ F. E. PEARMAN⁵ T. B. SPENCER⁹
G. E. BAMBERG¹⁸ A. B. COTHRAN¹⁶ S. C. STEWART¹¹ J. E. MARTIN¹⁵

First Sergeants

J. C. WYLIE⁸ W. E. G. BLACK¹ C. B. HAGOOD⁵ T. M. HARVEY⁷

Sergeants

C. Y. REAMER⁸ G. F. NORRIS¹ R. A. GANDY³ L. O. KING⁴
G. L. MORRISON¹² P. J. QUATTLEBAUM⁷ S. W. EPPS⁶ J. L. BRADFORD¹⁰
W. D. GARRISON²⁰ W. O. CAIN¹⁴ S. FORD¹⁵ D. H. SADLER¹¹
E. D. ELLIS²⁷ M. A. GRACE¹⁹ N. H. ALFORD²² H. R. POLLITZER²⁴

Corporals

F. T. HAMLIN³ A. M. HENRY¹ H. C. HIGHTOWER⁶ R. J. CONEY⁷
L. H. BELL¹⁵ GEO. T. MCGREGOR⁹ J. R. CONNOR¹⁰ J. M. MONROE¹⁴
I. H. MOREHEAD²⁰ W. L. TEMPLETON⁸ W. P. WALKER¹³ R. H. BREESE¹⁸
R. E. MILLER²⁸ W. O. SELF²² C. DEW²⁶ J. P. TARBOX²⁴

SECOND BATTALION

*Company D*H. G. STOKES⁵D. KOHN⁸S. M. WARD¹²T. S. GANDY²J. T. ROBERTSON¹⁶J. H. WYSE¹⁷M. M. MITCHELL²¹D. E. EARLE²⁶J. G. BARNWELL⁴V. B. HALL¹¹J. GELZER¹⁶S. I. FELDER²⁰*Company E**Captains*E. B. BOYKIN⁷*Lieutenants*W. E. CHAPMAN⁶W. G. TEMPLETON¹⁹*First Sergeants*J. P. GLENN⁶*Sergeants*J. P. CUMMINGS²H. C. TILLMAN⁹L. W. FOX¹³B. H. GARDNER²³*Corporals*C. NORTON⁵W. L. MAULDIN¹⁷H. E. PHILLIPS²³W. B. SPARKMAN²⁵*Company F*J. H. SPENCER³F. M. GUNBY⁷J. E. GETTYS¹⁴C. W. LEGERTON³C. V. SITTON¹⁸F. K. RHODES²⁵O. M. ROBERTS²J. A. WIER¹²F. C. WYSE¹⁹A. E. HOLMAN²⁷

ARTILLERY DETACHMENT

*Captain*C. L. REID¹³*Lieutenant*B. C. CROMER¹⁷*First Sergeant*W. H. BARNWELL⁴*Sergeants*V. LIVINGSTON⁵B. H. LAWRENCE²⁷

South Carolina Experiment Station

Board of Fertilizer Control

HON. J. E. TINDAL

HON. J. E. WANNAMAKER

HON. A. T. SMYTHE

H. M. STACKHOUSE, Secretary

Officers of Experiment Station

HENRY S. HARTZOG, President of College.....	Director
J. S. NEWMAN.....	Vice-Director and Agriculturist
M. B. HARDIN.....	Chief Chemist
F. S. SHIVER, Ph. G.....	Assistant Chemist
C. C. NEWMAN.....	Horticulturist
R. N. BRACKETT, Ph. D.....	Assistant Chemist
G. E. NESOM, B. Sc., D. V. M.....	Veterinarian
*C. C. McDONNELL, B. S.....	Assistant Chemist
HAVEN METCALF, A. M.....	Botanist
*B. F. ROBERTSON, B. S.....	Assistant Chemist
C. M. CONNER, B. S.....	Assistant Agriculturist
C. E. CHAMBLISS, B. S., M. Sc.....	Entomologist
D. H. HENRY, B. S.....	Assistant Chemist
O. M. WATSON.....	Poultryman
J. S. PICKETT.....	Experiment Station Foreman
JOHN N. HOOK, Secretary and Librarian	

Extracts from the Act of Congress, known as the "Hatch Act," approved March 2, 1887, for the establishment of Agricultural Experiment Stations in connection with Colleges established in the several States under the provisions of the Congressional Act, approved July 2, 1862, and known as the first "Morrill bill."

SECTION 1. * * * That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on the subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of the college or colleges, or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an Act approved July 2, 1862, entitled "An Act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and mechanic arts," or any of the supplements to said Act, a department to be known and designated as an "Agricultural Experiment Station." * * *

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different

*Engaged in fertilizer analysis.

stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. * * * It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures. * * *

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore described, the sum of \$15,000 per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of Section 8 of this Act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the Treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887: *Provided, however,* That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement or repair of a building or buildings necessary for carrying on the work of such station, and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

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SEC. 7. That nothing in this Act shall be construed to impair or modify the legal relation existing between any of said colleges and the government of the States or Territories in which they are respectively located.

SEC. 8. * * * And in case any State shall have established under the provisions of said Act of July 2 aforesaid an agricultural department or experiment station in connection with any university, college or institution not distinctively an agricultural college or school, and such State shall have established or shall hereafter establish a separate agricultural college or school, which shall have

connected therewith an experimental farm or station, the Legislature of such State may apply, in whole or in part, the appropriation by this Act made to such separate agricultural college or school, and no Legislature shall by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of money authorized by this Act are made subject to the legislative assent of the several States and Territories to the purpose of said grant: *Provided*, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of its Legislature meeting next after the passage of this Act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this Act shall be held or construed as binding the United States to continue any payments from the treasury to any or all the States or institutions mentioned in this Act, but Congress may at any time amend, suspend or repeal any or all the provisions of this Act.

General Statement

The work of the Experiment Station is classified under two general departments: The Chemical and the Agricultural.

The Agricultural is sub-divided into the following divisions: the agricultural division, the horticultural, the dairy, the veterinary, the botanical, the entomological, and the poultry division. The work of the Experiment Station during the past year included investigations of the chemical composition of various rice products; the inspection and analysis of commercial fertilizers, and the analysis of waters, phosphate rocks, ores, minerals, marls, clays and sand;—variety, fertilizer, rotation and cultural experiments; plant breeding, especially cotton and corn; studies of forage plants for hay and pasturage; cotton boll rot and other plant diseases; diseases of animals, tuberculosis, Texas fever, and glanders; comparisons of soiling and pasturage; experiments in feeding pigs, and in pasturizing milk; entomology, insects injurious to the cotton plant; and in horticulture, experiments in the repression of injurious insects and fungi, studies of frost-resisting varieties of fruits, methods of pruning grape vines, and forcing fruits and vegetables.

This Station has recently been provided with an expert poultryman, and investigations will now be directed in such lines that will develop the greatest practical benefit to our people, showing the best breeds for all the various purposes of poultry raising, the advantages of cross-breeding, the utility and value of capons, and stimulating such interest in, and attention to, the possibilities of this profitable industry as its importance demands.

Publications of the South Carolina Experiment Station

(Numbers marked thus * are exhausted.)

Bulletins of the Station are sent free to all citizens of the State requesting them.

Old Series

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| 1886 { | { | Report of Experiment Farm |
| 1888 { | | |
| | { | No. 1. *Tests of varieties of cotton. |
| | | No. 2. *Tests of commercial seeds. |
| 1888 { | | No. 3. *Analysis of fertilizers and feeding-stuffs.
*Annual report. |
| | { | No. 4. *Entomology. |
| | | No. 5. *Oats and wheat. |
| 1889 { | | No. 6. Hog cholera. |
| | | No. 7. Meteorology. |
| | { | No. 8. Chemical statistics of corn crop in South Carolina. |
| 1890 { | | Maize fodder ensilage; cow peas as a forage crop. |
| | | Composition of soja bean vines. |
| | | Annual report. |

New Series

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| | { | No. 1. *Analyses of commercial fertilizers, Part 1. |
| | | No. 2. *Cotton experiments with varieties and fertilizers. |
| | | No. 3. *Analyses of commercial fertilizers, Part 2. |
| 1891 { | | No. 4. Fertilizer test with wheat.
Annual report. |
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Annual report. |
| | | No. 8. Investigation chemical composition cotton seed meal. |
| | { | No. 9. Experiments with Irish potatoes. |
| | | No. 10. Notes on varieties of beans. |
| | | No. 11. Analyses commercial fertilizers, Part 1. |
| 1893 { | | No. 12. Co-operative soil tests of fertilizers. |
| | | No. 13. Analyses commercial fertilizers, Part 2. |
| | { | No. 14. Experiments with corn.
Annual report. |
| | | No. 15. Fertilizer experiments with corn. |
| 1894 { | | No. 16. Experiments with tomatoes. |
| | { | No. 17. Analyses commercial fertilizers. |
| | | No. 18. Fertilizer experiments with cotton.
Annual report. |

- 1895 { No. 19. Dairying.
No. 20. Analyses commercial fertilizers.
No. 21. Technical.
No. 22. Colic in horses and mules.
Annual report.
- 1896 { No. 23. Lameness in horses.
No. 24. Analyses commercial fertilizers, in two parts.
No. 25. *Distemper in horses and mules.
No. 26. *Founder in horses and red water in cattle.
No. 27. *Wounds and their treatment.
Annual report.
- 1897 { No. 28. The sweet potato as a starch-producer.
No. 29. Analyses commercial fertilizers.
No. 30. Determination of starch in the sweet potato.
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No. 32. Protection and improvement of worn soils.
Annual report.
- 1898 { No. 33. Test of dairy methods and apparatus.
Comparative tests of butter-fat.
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No. 47. A chemical study of the Sea Island cotton plant.
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No. 52. Pig feeding.
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No. 54. Analyses of commercial fertilizers, Part II.
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| | { | No. 68. Chemical study of Sea Island cotton seed. |
| 1902 | { | No. 69. Brown rot of peaches and plums. |
| | { | No. 70. Analyses commercial fertilizers. |
| | { | No. 71. New method of preserving sweet potatoes. |
| | { | No. 72. Texas fever, Part I. |

Free Analyses, Information, Etc.

The various departments of the College and Experiment Station will furnish, free of charge, advice and information on any topic pertaining to general agriculture, horticulture, botany, entomology, veterinary science, dairying, stock breeding, feeding, etc.; also analyses of fertilizers, marls, waters and other substances, assays of ores, determination of rocks and minerals, tests of bricks, cements, building stones, illuminating oils, calibration of electrical instruments, etc.

The departments cannot undertake to analyze stomachs or other parts of poisoned animals, make tests for poisons, nor to make bacteriological examinations.

All inquiries and requests should be addressed to the President, giving explicit account of conditions, difficulties, etc., as far as possible, and the matter will be referred promptly to the proper department for further correspondence. Before sending samples of any kind for examination or analysis, it is best to write for instructions, and thus avoid trouble and delay.



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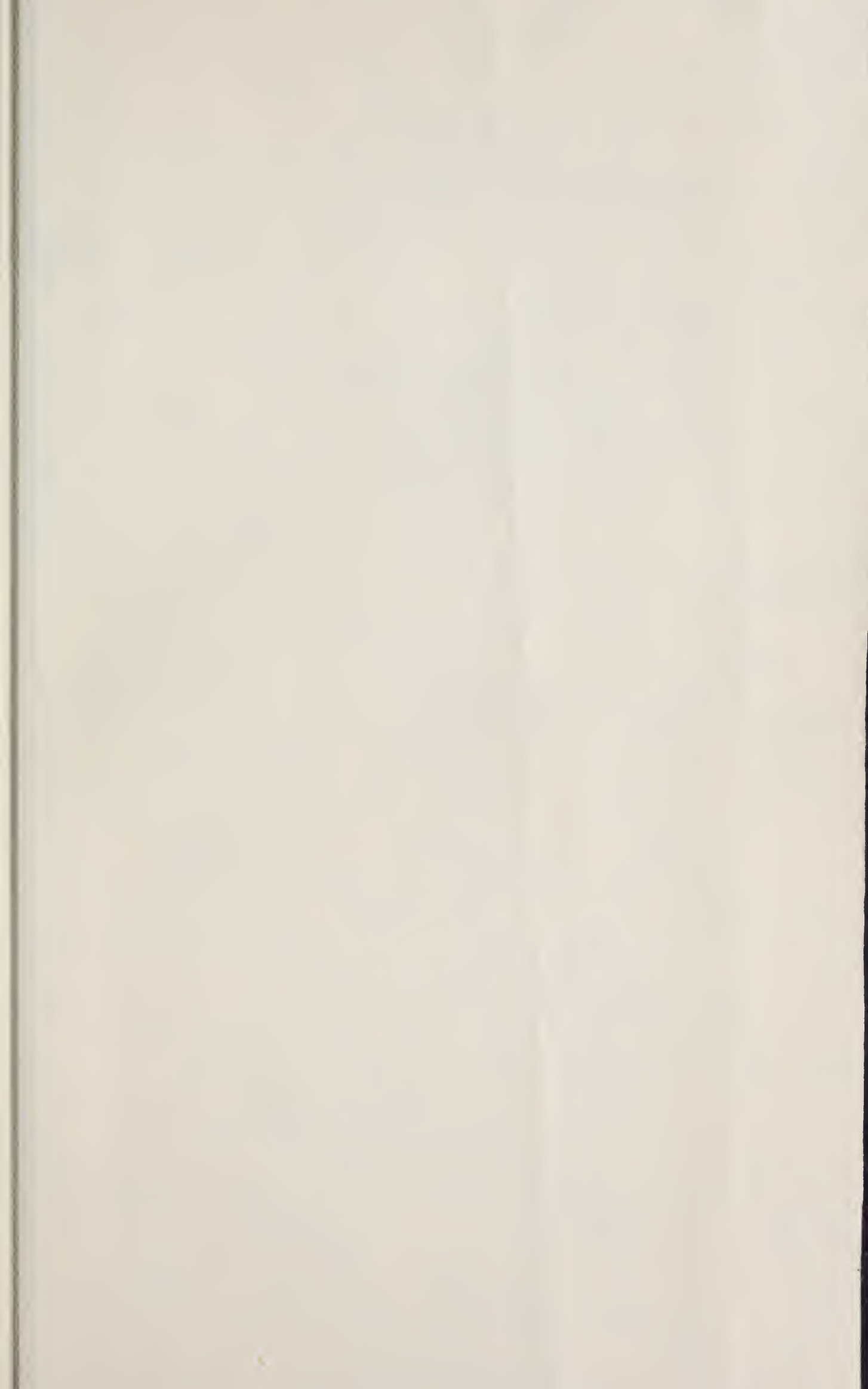
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